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Cover story

Venivel

Coscinium fenestratum (Goetgh.) Colebr
Family: MENISPERMACEAE
Vernacular names: Sinhala: *Bangvel-geta*; *Venivelgata* **Sanskrit:** *Daru-haridra, Darvi;* **English:** *Calumba Wood, Ceylon Calumba Root, Tree Turmeric;* **Tamil:** *Atturam, Imalam, Kadari, Manjalkodi, Udubadi,Maramanjal, Pasamantram, Sanniyam, Seyebasam, Tiyaram*

Coscinium fenestratum is considered as a critically endangered woody climbing shrub belonging to the genus Coscinium.
Distribution Occurs in the jungles of Sri Lanka, South India to Indonesia, and Malacca. It is common in the moist low- country forests in Ceylon[1].
It has a smooth bark, young shoots densely and finely yellow-tomentose. Leaves simple, alternate, exstipulate, large, 10-20 cm long, broadly ovate or roundish, sharply acute at apex, subcordate or slightly peltate at base; flowers very small, unisexual, male and female flowers on separate plants, sessile in small dense rounded heads which are stalked and umbellately or racemosely arranged in the axils of leaves, pedicel yellow-tomentose; ripe carpels 1-3 globose, brown, endocarp bony, very hard, deeply projected inwards on ventral face, seeds a albuminous, Flowers from January to March.
Composition of the stem and roots of this climber contain the alkaloids, berberin jatrorrhizine and palmatine.
The stem of *Coscinium fenestrtum* have more medicinal values. The stem is bitter and in the traditional medicine system, the plant has been used for treating diabetes mellitus and diverse therapeutic purposes. The decoction useful in vitiated conditions of *Kapha, Vata dosha*. The stem of the plant has anti-microbial, anti-inflammatory, anti-oxidants properties and used for curing diseases such as wounds, ulcers, skin diseases, abdominal disorders, and jaundice etc. Decoction of stem is used for snack bites and the stem bark is useful in treating intermittent fevers.Infusion of *C. fenestratum* is used in bath tubs, in facial creams as an antiseptic and as a common home remedy by the mothers in Sri Lanka[2].
In toxicity studies, the water extract of *C.fenestratum* showed negative results against acute and sub chronic toxicity tests[3].

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Contents

A Clinical Study of the Effect of *Nishalauha choorna* in the Management of Hepatitis (*Kamala*)

Jayawardhana N.D.N[1*], Tiwari S.K.[2]

Abstract

Hepatitis is an inflammatory condition of the liver which correlated with the *Kamala* in Ayurveda. *Kamala* is a *Rasa* and *Rakta dhatugata*, *Pittaja nanatmaja* and *Raktavaha srotodushtijanya vyadhi*. Although, there is a high prevalence of *Kamala*, minimum number of sufficient clinical studies constructed to find the effectiveness of the formulae on *Kamala*. Therefore, this clinical study was conducted to evaluate the therapeutic efficacy of *Nishalauha choorna* on *Kamala* patients. Randomly selected twenty-two patients who were attended to the Sir Sunderlal Hospital, India and suggestive of Kamala/Hepatitis in history, clinical signs and symptoms and laboratory investigations especially by doing hepatitis profile were included in this study. The prepared *Nishalauha choorna* 5gm given to those patients orally twice a day after meals with 5 ml bee honey and 2.5 ml Ghee for a period of three months and signs and symptoms and laboratory investigations were determined before and after the treatments. The efficacy of the *Nishalauha choorna* was evaluated by the improvement of signs and symptoms along with the laboratory findings. Statistical analysis was calculated by using mean and standard deviation, Kruskal Wallis H test, Friedman and Chi square test. The results showed markedly significant improvement of the symptoms such as status of *Agni* and *Ama* ($P<0.01$), abdominal pain, abdominal tenderness, burning sensation, easy fatigability, anorexia, clay colour stools, nausea, vomiting, fever and pruritus ($P<0.001$). And also, there was a significant influence ($p<0.001$) on SGOT, direct bilirubine, indirect bilirubine and serum alkaline phosphatase at the end of the three months of treatment period. Hence, it can be concluded that the *Nishalauha choorna* is effective in the treatment of Hepatitis/ *Kamala*.

Keywords: Hepatitis, *Kamala*, *Nishalauha choorna*

Introduction

Hepatitis is an inflammation of the liver that may be due to various causes including a number of viruses called Hepatitis A, B, C, D, and E. The symptoms of hepatitis include yellowish discoloration in the eyes and the skin, nausea, vomiting, stomach pain, fever, extreme fatigue, muscle and joint pain and unexpected weight loss[1]. The Hepatitis A and E are most commonly transmitted by consuming food or water contaminated by feces from a person infected with hepatitis A and E. Hepatitis B, C, and D are transmitted through direct contact with infected body fluids, by contaminated blood in needles shared by drug users, by sexual activity with infected partners and infected mothers who pass it to their babies[2].

Hepatitis can be correlated with the Ayurvedic disease *Kamala*[3]. Clinically Jaundice can correlate with *Kamala* in Ayurveda. But the term *Kamala* denotes the clinical as well as pathological process rather than a sign or a symptom as in case of Jaundice. The characteristic features of *Kamala* include *Peeta* or *Haridra* (yellowish discolouration) are visualized on the *Netra* (eyes), *Tvaca* (skin) and

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Mutra (urine) etc. These exceptionalities are recognized caused by *Rakta dushti* due to *Pitta vriddhi* in the disease of *Kamala*. Among the five types of *Pitta*, *Ranjaka pitta* is mainly contributed for the above said symptoms. The authentic Ayurvedic texts mentioned *Yakrt* (liver) is a seat of *Ranjaka pitta*.[4,5,6,7] And also mentioned that, due to vitiated *Ranjaka pitta* the whole body can be vitiated. This can be caused by excessive indulgence of *Pitta vriddhikara ahara* and *Viharana* by *Pittolbana* person, and this leads to vitiates *Agni* of the person. This vitiated *Agni* leading to vitiate *Pitta* and the person gets *Saama pitta*. This *Saama pitta* vitiates the *Rasa*, *Rakta* and *Maamsa dhatu* of the body and manifests *Kamala*[8]. *Kamala* is mentioned as *Rasa* and *Rakta dhatugata*, *Pitta nanatmaja* and *Raktavaha sroto dushtijanya vyadhi*. Two classification of *Kamala* stated in the texts, namely *Koshtashrita* and *Shakhashritha kamala* and *Shakhashrita kamala* is strikingly similar to medical and obstructive Jaundice in Western Medicine. Acute Viral Hepatitis is described the recent infection of the liver in a person who was healthy earlier that can be well correlated with *Kamala*.

Chronic active Hepatitis correlates with untreated complicated types of *Kamala* such as *Kumbha kamala*, *Halimaka*, *Lagharaka*/*Alasaka* and *Paanaki;* all of which refer to various stages of Decompensated Liver Disease.

Most of the causes of Hepatitis cannot be distinguished on the basis of the pathology but some do have particular features that are suggestive of a particular diagnosis. And although most of those carrying Hepatitis do not know they have it, they can unknowingly transmit it to others

and at any time in their lives, it can develop to kill or disable them[9,10].

Although, many Ayurvedic drugs have been indicated for management of *Kamala* in authentic texts of Ayurveda, very few numbers of drugs have been undergone extensive clinical and experimental research trials with special reference to Hepatitis. Therefore, further studies are needed to evaluate their role in the management of Hepatitis/ *Kamala*. Hence, this study has been designed to determine the effect of Ayurveda formula namely, *Nishalauha choorna* in the Management of Hepatitis (*Kamala*)[11].

Material and Methods

Study Site:

The patients attend to the O.P.D and I.P.D. of the Department of Kayacikitsa, Sir Sunderlal Hospital, Banaras Hindu University, UP, Varanasi during the period of August 2010 to November 2011.

Inclusion criteria:

- Age between 11 – 70 years, both sex
- History, clinical signs and symptoms and laboratory investigations especially by doing Hepatitis profile suggestive of *Kamala*/Hepatitis.
- Patients willing to participate in the above trail and giving informed consent

Exclusion criteria:

- Patients having history of chronic illness such as Diabetes Mellitus, Hypertention, Asthma, Chronic heart failure, Tuberculosis and AIDS etc.
- Patients who have developed gross swelling of the limbs, Portal Hypertension, Esophageal Varices, Bleeding disorders and Hepato-Renal Syndrome, Cirrhosis, Malignancy, Hepatic Encephalopathy and other systemic complications.
- Patients in whom, there is need of surgery (Obstructive Jaundice, liver transplant)
- Pregnant and lactating women.

Sample size:

Randomly selected 22 patients having *Kamala* were selected to this study.

Test Drug:

Nishalauha choorna

The test drug is prepared in the well reputed Ayurvedic drug manufacturing pharmaceutical company, Varanasi, Uttara pradesh, as per the classical reference of Caraka Samhitha, *Pandu roga adhikara*[11].

Ingredients of the *Nishalauha choorna*

Table 1 mentioned the ingredients of *Nishalauha choorna.*

Table 1: ingredients of the *Nishalauha choorna*

	Ingredient	Scientific name	Part used	Amount
1.	*Haritaki*	*Terminalia Chebula*	Fruit	1kg
2.	*Bibheetaki*	*Terminalia belerica*	Fruit	1kg
3.	*Àmalaki*	*Embelica Officinalis*	Fruit	1kg
4.	*HaridrÁ*	*Curcuma Longa*	Rhizome	1kg
5.	*Daruharidra*	*Berberis Aristata*	Stem	1kg
6.	*Kutaki*	*Picrorhiza Kurroa*	Rhizome	1kg
7.	*Lauha Bhashma*	Ferrous Oxide		1kg

Method of preparation of the *Nishalauha choorna*

All herbal ingredients were cleaned with the tap water and dried under the shade for 2 days. The mineral ingredient, *Lauha*, was purified according to the purifying methods mentioned in Ayurveda[12]. All ingredients were powdered by pounding in with mortar and pestle separately and sieved through 80 mesh sieve. Then weighted the required quantities of the ingredients and then mixed altogether well. Compound form of powder once again filtered with sieve and preserved in glass container.

Management plan

Prepared *Nishalauha choorna* advised to take 5gm twice daily after meals for a period of three months along with one tea spoon full (5 ml) bee honey and half tea spoon full (2.5 ml) Ghee[13].

Assessment criteria

Each and every patient was examined and assessed using standard proforma (before and after treatment). The first treatment period was recorded on 3rd day after the initial treatment and then after every 15 days up to 3 months was recorded.

Subjective criteria

Subjective criteria included the findings from chief complaints, history of present illness, history of past illness, drug history, family history and personal history.

Objective criteria

1. Physical examination: general examination, systematic examination according to Modern and Ayurveda
2. Laboratory Investigations- routing investigations: Hb %, WBC, Erythrocyte Sedimentation Rate (ESR), Renal Function Test (RFT), Liver Function Test **(**LFT), Fasting Blood Sugar (FBS) and USG Abdomen

Parameters for the assessment of the overall effect of the trial drug

Parameters for the assessment of the overall effect of the trial drug were used as mentioned in the table 2.

Table 2: Parameters for the assessment of the overall effect of the trial drug

Overall effect	Hepatitis profile	Renal Function Test (RNF), Liver Function Test (LFT), Urine analysis	Signs and symptoms
Completely cured – 100%	Negative	Within Normal Limit	Completely Reduced
Marked improvement - 75 - 99%	Positive	Within Normal Limit	Completely Reduced
Moderate improvement- 51 - 74%	Positive	Above Normal Limit (Mild Difference)	moderately reduced
Mild improvement- 25 - 50%	Positive	Above Normal Limit (Moderate Difference)	mildly reduced
Unchanged – < 25%	Positive	Above Normal Limit (Large Difference)	not reduced

Statistical analysis

Mean and Standard Deviation (SD) were used as parameters of before treatment (BT) and after treatment (AT) scores. Variables which are not followed normal distribution then non parametric test was used according to the suitability of data. In that Kruskal Wallis H test was used to test the

significant changes in the quantitative variables from base line to completion of the treatment and Friedman & Chi square Test for different follow ups for within group comparison. SPSS 16.0 for windows software was used for statistical analysis in this study.

Results

Demographic profile

Out of 22 Hepatitis patients, trial was conducted on 21 patients and one case dropped down from the treatment study in 4th report on due to incomplete follow up.

As per the Ayurvedic diagnosis, maximum number of patients of 15 were diagnosed as *Koshthashritha kamala* (68.2%) while 5 (22.7%) for *Shakhashritha kamala* and 2 for (9.1%) *Kumbha kamala*.

In accordance to the modern diagnosis, the incidence of viral hepatitis B recorded from 20 of patients (90.9%) appears to be more common in population as compared to other types of hepatitis. Among 22 cases, 2 patients (9.1%) had hepatitis A.

Incidence of symptomatology in the therapeutic trial

Effect of trial drug on mean changes in status of *Ama, Agni, Koshtha* and Bowel habits mentioned in Table 3.

Effect of trial drug on mean changes in status of *Aruchi, Thila pishtha nibha mala, Udgara, Chardi, Deha kandu* and *Daha* mentioned in Table 4.

Table 5 indicates the effect of trial drug on clinical features of *Kamala.*

Effect of trail drug on hematological and biochemical laboratory parameters

Effect of trail drug on hematological and biochemical laboratory parameters mentioned in the table 6 to 12.

Table 3: Effect of trial drug on mean changes in status of *Ama, Agni, Koshtha* and Bowel habbits

Symptom and Signs	Grade	BT	%	AT	%	Within the group comparison Wilcoxon Signed Ranked Test BT vs. AT
Ama	*Nirama*/No	0	0.0	13	61.9	Z= 4.16 HS
	Mild	4	18.2	6	28.6	
	Moderate	12	54.5	2	9.5	
	Severe	6	27.3	0	0.0	
Agni	*Samagni*	3	13.6	14	66.7	Z= 3.02 P< 0.01 S
	Mandagni	11	50.0	4	19.0	
	Vishamagni	8	36.4	3	14.3	
	Tikshanagni	0	0.0	0	0.0	
Koshtha	*Samanya*	6	27.3	18	85.7	Z= 3.18 P<0.001 HS
	Mrudu	6	27.3	2	9.5	
	Krura	10	45.5	1	4.8	
Bowel	Normal	4	18.2	16	76.2	Z= 2.50 P<0.01 S
	Loose	6	27.3	2	9.5	
	Constipation	9	40.9	1	4.8	
	Loose/ Constipation	3	13.6	2	9.5	

BT: Before Treatment AT: After Treatment

Table 4: **Effect of trial drug on mean changes in status of *Aruchi, Thila pishtha nibha mala, Udgara, Chardi, Deha kandu* and *Daha***

Symptom	Grade	BT	Treatment period					AT	Group comparison Friedman & Chi-Square
			1st visit	2nd visit	3rd visit	4th visit	5th visit		
Aruchi (Anorexia)	Absent / Normal Appetite	4	7	20	21	21	21	21	87.58 P<.001 HS
	Mild / 1 main meal + BF	13	13	1	1	0	0	0	
	Moderate / only Breakfast	4	2	1	0	0	0	0	
	Severe / only light Breakfast	1	0	0	0	0	0	0	
Tilapishtha Sannibha Mala (Clay colour Stools)	Normal Colour	15	20	21	22	21	21	21	28.86 P<0.001 HS
	Light / Clay Colour	7	2	1	0	0	0	0	
Udgara (Nausea)	Absent	11	19	21	21	21	21	21	49.81 P<0.001 HS
	Mild / Occasional	8	2	0	1	0	0	0	
	Moderate / Daily on/off	2	0	1	0	0	0	0	
	Severe / Continuously	1	1	0	0	0	0	0	
Cardi (Vomiting)	Absent	17	19	22	22	22	22	22	20.84 P<0.002 HS
	Mild - Occasional	2	3	0	0	0	0	0	
	Moderate - 1-2 times /day	1	0	0	0	0	0	0	
	Severe – > 2times / day	2	0	0	0	0	0	0	
Jvara (Fever)	Absent	13	18	21	22	22	22	22	39.87 P<0.001 HS
	Mild 99-100^{0}F	4	4	1	0	0	0	0	
	Moderate 100.1-103^{0}F	5	0	0	0	0	0	0	
	Severe > 103^{0}F	0	0	0	0	0	0	0	
Deha Kandu	Absent	13	15	21	21	21	21	21	41.21 P<0.001 HS
	Mild	2	5	0	1	0	0	0	
	Moderate	4	1	1	0	0	0	0	
	Severe	3	1	0	0	0	0	0	

BT: Before Treatment AT: After Treatment

Table 5: Effect of trial drug on clinical features of *Kamala*

Symptom	Grade	BT	Treatment period					AT	Group comparison Friedman & Chi-Square
			1st visit	2nd visit	3rd visit	4th visit	5th visit		
Haridra netra (Yellowish discolouration of the eyes)	Absent/Normal	0	3	6	9	13	14	17	479.43 P<0.001 HS
	Mild – Light yellow col. Sclera	10	9	9	10	7	6	4	
	Moderate – Mild < Severe	8	5	5	1	0	1	0	
	Severe – Dark yellow col. Sclera	4	5	2	2	1	0	0	
Rakta pita mutrata	Absent/Normal	1	7	10	12	17	19	20	83.85 P<.001 HS
	Mild – light yellow colour and transparent	11	7	7	7	3	2	1	
	Moderate – cloudy / semitransparent	5	3	1	1	0	0	0	
	Severe – Dark yellow	5	5	4	2	1	0	0	
Udara vedana (Abdominal pain)	Absent	10	15	20	22	21	21	21	54.13 P<0.001 HS
	Mild	8	5	2	0	0	0	0	
	Moderate	3	2	0	0	0	0	0	
	Severe	1	0	0	0	0	0	0	
Udara shula (Abdominal Tenderness)	Absent	7	10	19	19	20	21	21	69.74 P<0.001 HS
	Mild	12	9	2	3	1	0	0	
	Moderate	2	3	1	0	0	0	0	
	Severe	1	0	0	0	0	0	0	
Daha (Burning Sensation)	Absent	6	9	16	20	20	20	20	70.30 P<0.001 HS
	Mild / Occasional	13	9	5	1	0	1	1	
	Moderate / Daily on/off	1	3	0	1	1	0	0	
	Severe / Continuously	2	1	1	0	0	0	0	
Daurbalya (Fatigability)	Absent	6	15	20	21	20	20	20	71.01 P<0.001 HS
	Mild	7	5	1	0	0	0	1	
	Moderate	7	1	0	0	0	1	0	
	Severe	2	1	1	1	1	0	0	

BT: Before Treatment AT: After Treatment

Table 6: Effect of trial drug on hepatitis profile

Hepatitis profile								
Koshtasrita kamala			***Shakasrita kamala***			***Kumba kamala***		
BT	**AT**	**Improve %**	**BT**	**AT**	**Improve %**	**BT**	**AT**	**Improve %**
15	14	6.7	5	5	0.0	2	2	0.0

BT: Before Treatment AT: After Treatment

Table 7: Effect of trial drug on hepatomegaly

Clinical feature	**Grade**	***Koshtasrita kamala***		***Shakasrita kamala***		***Kumbha kamala***		**Total BT**	**Total AT**	**Within the group comparison Friedman &Chi-Square Test**
		BT	**AT**	**BT**	**AT**	**BT**	**AT**			
Hepatomegaly	Not palpable	6	15	2	5	0	0	8	20	Z= 3.50 P<0.01 HS
	Mild / < 2 cm	8	2	3	0	0	1	11	3	
	Mod - >2 cm – <5 cm	1	0	0	0	2	0	3	0	
	Severe >5 cm	0	0	0	0	0	0	0	0	
Spleenomegaly	Not palpable	13	15	2	5	0	0	15	20	Z= 2.45 P<0.05 S
	Mild	2	0	3	0	1	1	6	0	
	Moderate	0	0	0	0	1	0	1	0	
	Severe	0	0	0	0	0	0	0	0	

Table 8: Effect of trial drug on haemoglobin percentage (Hb%)

Clinical parameter	**BT**	**AT**	**Within the group comparison Paired 't' test BT - AT**
Hemoglobin (gm/dl) Mean ±SD	8.88 ± 1.75	9.87 ± 1.23	0.95± 0.89 t = 4.86 p<0.001
Total Leucocytes Count / TLC Mean ±SD (per mm^3)	8415.45 ± 1682.74	8239.81 ± 1074.46	+ 160.00 ± 1377.60 t = 0.53p>0.05

BT: Before Treatment AT: After Treatment

Table 9: Effect of trial drug on Liver enzyme (SGPT, SGOT), Total bilirubin level, Direct bilirubin level, Indirect bilirubin level

Clinical Parameter	BT	Treatment period					AT	Within the group comparison Paired 't' test BT vs. AT
		1st visit	2nd visit	3rd visit	4th visit	5th visit		
SGPT/ALT (IU)	254.8 ± 222.34	226.18 ± 237.15	185.45 ± 218.57	128.95 ± 151.73	76.38 ± 73.94	61.33± 57.58	50.62 ± 39.87	194.62 ± 188.20 t = 4.74 p<0.001
SGOT/AST (IU)	178.36 ± 142.26	141.14± 130.97	106.36 ± 99.57	70.45 ± 50.82	51.38± 36.70	41.95 ± 28.40	37.76± 22.70	142.81 ± 127.45 t = 5.14 p<0.001
Total Bilirubin Level (mg/dl)	4.16 ± 3.09	3.69±3.17	2.80 ± 2.92	2.16± 2.07	1.53 ± 1.28	1.31± 0.64	1.17± 0.51	2.74± 2.46 t = 5.10 p<0.001
Direct Bilirubin Level (mg/dl)	2.83 ± 2.24	2.37± 2.16	2.18 ± 2.40	1.63± 1.66	1.17 ± 0.96	1.00± 0.35	0.92 ± 0.38	1.73 ± 1.86 t = 4.28 p<0.001
Indirect Bilirubin Level (mg/dl)	1.33 ± 1.11	1.32 ± 1.13	0.61± 0.66	0.53 ± 0.50	0.36± 0.44	0.31 ± 0.33	0.25± 0.22	1.00± 0.97 t = 4.73 p<0.001

BT: Before Treatment AT: After Treatment

Table 10: Effect of trial drug on liver enzyme in Ayurveda diagnosis of *Kamala*

Clinical parameter	Investigation period	*Koshtasrita kamala*	*Shakasrita kamala*	*Kumba kamala*
(SGPT/ALT)	**BT**	241.60 ± 191.02	130.40 ± 76.61	665.00 ± 295.57
	AT	48.87 ± 37.08	34.80 ± 5.89	156.00 ± 0
SGOT/AST	**BT**	176.53 ± 116.68	104.80 ± 63.40	376.00 ± 345.07
	AT	34.40 ± 13.24	30.80 ± 6.57	123.00 ± 0
Total Bilirubin	**BT**	3.47 ± 2.03	3.16 ± 0.81	3.00 ± 0
	AT	1.09 ± 0.29	1.04 ± 0.37	1.19 ± 3.18
Alkaline Phosphatase (mg/dl)	**BT**	196.87 ± 50.61	170.60 ± 52.69	399.00 ± 77.78
	AT	181.00 ± 30.41	161.00 ± 41.45	280.21 ± 34.67

BT: Before Treatment AT: After Treatment

Table 11: Effect of trial drug on Serum alkaline phosphatase, Total protein, Serum albumin, Serum globulin, Serum urea, Serum creatinine, Fasting blood sugar in the patients with *Kamala*

Clinical parameter	Mean ±SD		Within the group comparison Paired 't' test BT - AT
	BT	AT	
Serum Alkaline Phosphates (mg/dl)	209.27 ± 80.11	180.95 ± 39.76	21.90 ± 46.22 t = 2.17p>0.05
Total Protein (g/dl)	6.76 ± 0.98	7.02 ± 0.49	2.33 ± 0.94 t = 1.14p>0.05
Serum Albumin	3.98 ± 0.95	4.27 ± 0.61	2.05 ± 0.84 t = 1.11p>0.05
Serum Globulin	2.78 ± 0.69	2.76 ± 0.39	2.86 ± 0.70 t = 0.19 p>0.05
Serum Urea	37.60 ± 12.99	33.67± 5.10	2.57 ± 10.38 t = 1.14p>0.05
Serum Creatinine(mg/dl) Mean ±SD	1.34 ± 0.22	0.90 ± 0.14	1.26 ± 0.30 t = 0.19 p>0.05
Fasting Blood Sugar (FBS)	93.36 ± 22.26	92.19 ± 9.06	0.67 ± 20.86 t = 0.15p>0.05

BT: Before Treatment AT: After Treatment

Table 12: Comparison of overall effect

Total		Unchanged		Mild Improvement		Moderate Improvement		Marked Improvement		Completely cured	
No	%	No	%	No	%	No	%	No	%	No	%
Koshthashritha kamala											
15	23.0	0	0	0	0	6	9.4	8	12.5	1	1.6
Shakhashritha kamala											
5	7.8	0	0	0	0	2	3.1	3	4.7	0	0
Kumbha kamala											
2	3.1	0	0	0	0	1	1.6	0	0	0	0

Completely cured result was found in only 1 case (4.56%). Out of 22 patients 11 cases (50%) patients were showed marked improvement. Moderate improvement of the trial drug was observed in 40.9% of cases.

Discussion

The entire range of digestive and metabolic activity of the body takes place with the help of biological fire of the body called *Agni*. *Ama* is a condition due to undigested or unmetabolised food formed as a result of abnormality in *Agni*. In this clinical study

with *Nishalauha choorna*, there was highly significant ($p<0.001$) improvement can be seen in status of *Agni* and *Ama* before and after the treatment within the treated group. In addition to that, the study was observed a highly significant and rapid symptomatic improvement in the scores for symptoms such as *Udara vedana* (abdominal pain), *Udara shula* (abdominal Tenderness), *Daha* (burning sensation), *Daurbalya* (easy fatigability), *Aruci* (anorexia), *Tilapishtha sannibha* (clay colour Stools), *Udgara* (nausea), *Chardi* (vomiting), *Jvara* (fever) and *Deha kandu* (pruritus).

Although the exact mechanism of this herbal formulation on liver function and body metabolism is not yet clearly know. But in this study, significant reduction of SGPT/ALT, SGOT/AST, total bilirubin level, direct bilirubin level, and indirect bilirubin level can be seen. Therefore, these results can be suggested that this treatment might reduce hepatic inflammation, perhaps by masking viral antigens and thereby reducing host mediated cell damage.

There were no clinically significant alterations in hematological and other biochemical safety parameters such as WBC, Serum urea, Serum creatinine and FBS levels, as compared to pretreatment values and also there were no clinically significant abnormal laboratory investigative findings, either observed or reported, during the entire study period.

Due to dominant *Tikta rasa* of the *Nishalauha choorna,* few patients were complaint the unpleasant palatability induced nausea and vomiting in mild in nature. And there were no any adverse effects were occurred during the trial period of the test drug.

Conclusion

According to the critical Ayurvedic and modern review; *Kamala* can be identified as an example for metabolic disorders which is comparable to the most pertinent infectious disease Hepatitis and several types of Hepatitis can be correlated with *Kamala roga*. In the light of the results obtained this study proved the fact that *Nishalauha choorna* has been immensely effective and safe Ayurvedic drug for *Kamala roga*. More clinical implementations with large scale of population with time compliancy are important to find the more accurate conclusion.

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Influence of *Deha prakriti* and Causative Factors on *Kaphaja shirah shoola* – A Survey Study

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Abstract

Kaphaja shirah shoola is the most common disease for the time being and major health care issue among the *Shiro roga* that affects considerable number of population. It can be correlated with chronic sinusitis in Modern Medicine and it is the 5th most common disease treated with antibiotics in all age groups in both the developing and developed countries in the world without knowing specific causes even today. This study was designed to determine the main causative factors and the influence of *Deha prakriti* on *Kaphaja shirah shoola*. It was conducted from January to December in 2016 at National Ayurveda Teaching Hospital, Colombo, Sri Lanka**.** Total 60 patients of both genders with age between 18-60 years were randomly selected and data was collected by using questionnaires after obtaining the consent. Data was analyzed by SPSS 21 version. It was revealed that 83% were in the age group of 18-47 years (young adults). 68% were males 47% had family history. (47% *Kapha pitta* & 32% *Kapha vata*) 79% of patients were *Kapha* predominance *Prakriti*. Majority (58%) were normal (healthy) Body Mass Index (BMI) category. As dietary habits, 93% non-vegetarian, 100% & 77% consumption of *Kapha* and *Pitta vriddhikara* food respectively and 53% excessive intake of cold water have been reported. It was reported that 65% less sleep, 45% evening or night bathing, 65% fail to dry hair after bathing, 83% use of chemical cosmetics, 80 % expose to dusty environment and 53% suppression of natural urges as behavioral habits. It can be concluded that the individuals possess *Kapha* predominance *Prakriti* and association of *Kapha vriddhikara* dietary and behavioral habits are more susceptible to have *Kaphaja shirah shoola* in their lives.

Keywords: *Kaphaja shirah shoola*, *Deha prakriti*, Body Mass Index (BMI)

Introduction

Shirsha is known as *"Uttamanga",* the supreme of all organs in a living being where the *Prana* resides[1]. *Prakriti vata, Pitta* and *Kapha* are situated respectively in the lower, middle and upper part of the body. *Shirah* is one of *Trimarma*[2], *Shadanga*[3] and *Dasapranayathana*[4]. It consists of specific sensory organs such as eyes, nose, ears, and mouth. These sensory organs are known as seven *Dvaras* among the *Navadvaras*[5] in the body. Hence *Shirah* is *Kapha sthana*, due to vitiation of *Kapha dosha* by *Mithya ahara, Vihara*, there may be higher probability to have *Kaphaja roga*[6]. *Shirah shoola* (headache) is the term used by the patients to describe the pain and discomforts of the head which is one of the commonest complain of the individuals seeking treatment in Ayurveda as well as modern medicine. The pain is manifested as throbbing, piercing, pulsating, stabbing, dull or aching. All these types of pain in head are introduced as *Shirah shoola*.

In Ayurveda, *Shiro roga* is broad term applicable to the diseases of the head in *Shalakya tantra*. Vitiation of *Vatadi tridosha* individually or in their combination and vitiation of *Rakta* accumulates in

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Shirah that cause pain of the head is called *Shirah shoola*[7,8]. The Ayurveda authentic texts, *Susruta samhita*[9], *Caraka samhita*[10], *Ashtanga hridaya Samhita*[11], *Madawa nidhana*[12], *Ashtanga samgraha* and *Bhava prakasha* described the headache under the chapter of *Shiroroga* that characterizes mainly *Shirahshoola*. In *Ashtanga hradaya*, the word "*Shirastapa*" has mentioned instead of *Shirah shoola*[13]. Acharya Susruta has described eleven types of *Shiro roga* as *Vataja, Pittaja, Kaphaja, Sannipataja, Raktaja, Kshayaja, Krimija, Suryavarta, Anantavata, Ardhavabedaka* and *Sankaka*[14].

Every individual has a unique identity and possesses unique constitution or body type that is known as *Prakriti* in Ayurveda. It is an inherited characteristic to each individual and mainly divided as *Deha prakriti* and *Manasika prakriti*. These two types of *Prakriti* closely related to the most of the diseases and inherited to each individual at the time of *Shukra artava sammurchana* state in *Garbhashaya*. *Dosik* condition of the uterus, consumption of food and drinks as well as mental state during the pregnancy and the climate condition of the environment at that time are the responsible factors affect to origin *Deha prakriti* and *Manasika prakriti* of an individual in embryonic stage[15, 16, 17]. Inherited *Prakriti* is never change at birth until death. Both types of *Prakriti* is playing major role in preventive and curative aspects of almost all the diseases.

Kaphaja shirah shoola is one of *Shiroroga* mentioned in Ayurveda authentic texts that can be correlated with chronic sinusitis which is a common condition in which the cavities around nasal passages (sinuses) become inflamed and swollen, but the maxillary sinuses are the mostly involved one. The prevalence of chronic sinusitis in the United State is 146 per 1000 population statistically[18]. In Sri Lanka prevalence study of *Kaphaja shirah shoola* has not done up to now. The incidence of this disease appears to be increasing yearly without knowing specific causes even today. Chronic sinusitis is the 5th most common disease treated with antibiotics in the system of modern medicine. The prevalence of this disease in India is 1 in 8 individuals. Recent estimation suffering from chronic sinusitis in India is 134 million and that is more than population of Japan. Statistically it is mentioned that women appear to be at higher risk than men in other countries[19]. Not only that *Kaphaja shirah shoola* is the most common disease for the time being which can be seen in all age groups in both the developing and developed countries in the world[20]. The symptoms of *Kaphaja shirah shoola* are *Guru* (heaviness and fullness of head), *Himam* (coldness in head), *Shuna akshi kuta vadana* (swelling of face especially around the eyes) and *Shirobhitapah* (dull pain) according to Ayurveda authentic texts[21, 22 ,23, 24]. This survey study will reveal important causative factors and influence of *Deha prakriti* on *Shirah shoola*.

Aims & Objectives

This study was carried out to determine the main causative factors and the influence of *Deha prakriti* on *Kaphaja shirah shoola*.

Methodology

The present survey has been carried out in *Shalakya* clinic at National Ayurveda teaching Hospital, Borella, Sri Lanka. Data were collected from 60 *Kaphaja shirah shoola* patients randomly, irrespective of their sex with the age range between 18-60 years, by specially prepared two questionnaires with adopting individual discussion method. *Prakriti* has been analyzed according to the Ayurvedic classics by one questionnaire and BMI categories were also assessed based on the ranges given in Wikipedia, the free encyclopedia[25] to rule out any relation with this disease. Ethical approval was taken under the No. ERC/16/57 by Ethics Review Committee of Institute of Indigenous Medicine, University of Colombo, Rajagiriya.

Statistical Analysis

Collected data of the patients were analyzed by SPSS 21 version.

Observation and Results

Total 60 patients were registered for the study.

Distribution of age

Table 1 shows the patients with age wise distribution.

Table 1: Distribution of age

Age in years (n=60)	No. of Patients	Percentage (%)
18-27	15	25%
28-37	14	23%
38-47	21	35%
48-57	09	15%
58-67	01	02%
Total	60	100%

83% of patients were 18-47 yrs. (25% + 23% + 35%) and 17% were 48 – 67 years.

Distribution of sex

Figure 1 shows the sex wise distribution of patients.

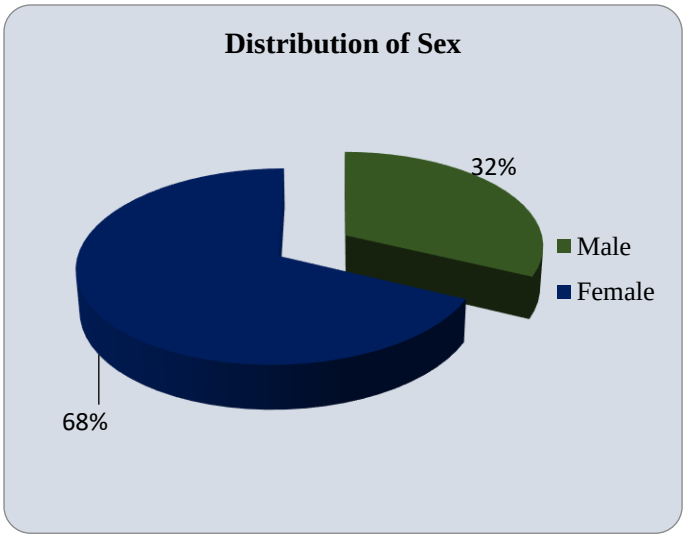

Fig. 1: Distribution of sex

In this study 68% of patients were females.

Distribution of family history

It was found that 47% of patients had family history and rest of the patients (53%) had not family history (Figure 2).

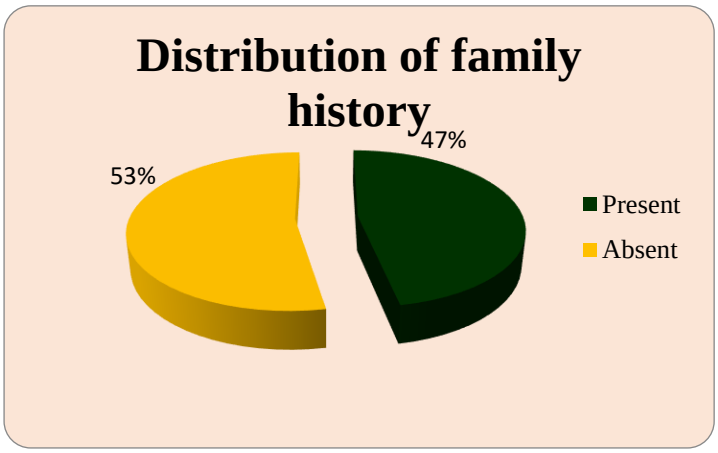

Fig. 2: Distribution of family history

Distribution of *Deha prakriti*

Figure 3 shows the distribution of *Deha prakrithi*

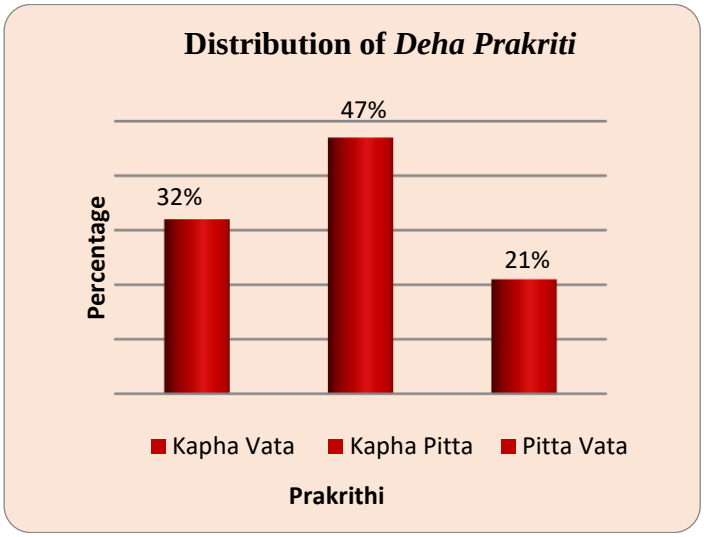

Fig. 3: Distribution of *Deha prakriti*

It was revealed that 79% (*Kapha pitta* 47% + *Kapha vata* 32%) of the patients were *Kapha* predominance *Deha prakriti*.

Distribution of Body Mass Index (BMI)

58% of patients were in normal weight of BMI category (Table 2).

Table 2: Distribution of Body Mass Index (BMI)

BMI	BMI Category	No. of Patients	Percentage (%)
Below 18.5	Under weight	-	-
18.5 – 24.9	Normal weight	35	58%
25 – 29. 9	Over weight	15	25%
30 & above	Obese	10	17%
Total		60	100%

Dietary habits

Figure 4 shows the distribution of patients according to dietary pattern.

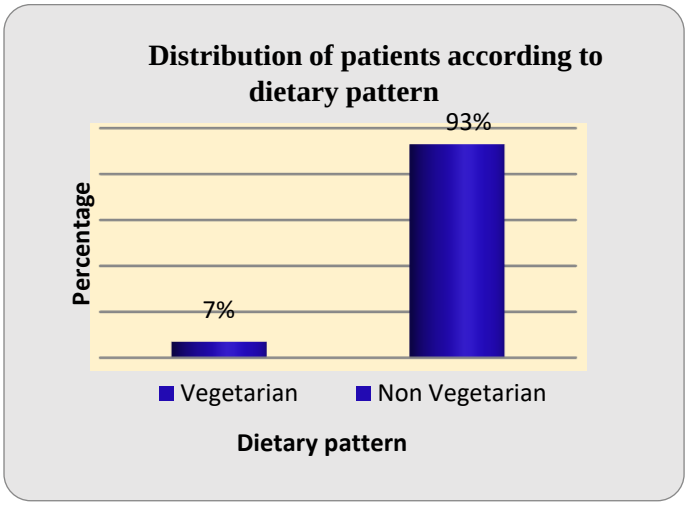

Fig. 4: Distribution of Dietary pattern

93% of patients were non vegetarians.

Distribution of the Consumption of *Dosha vruddhikara ahara*

It was revealed that majority of the patients were consumed *Pitta vruddhikara* foods (77%) and all of the patients (100%) were consumed *Kapha vruddhikara* foods (Figure 4).

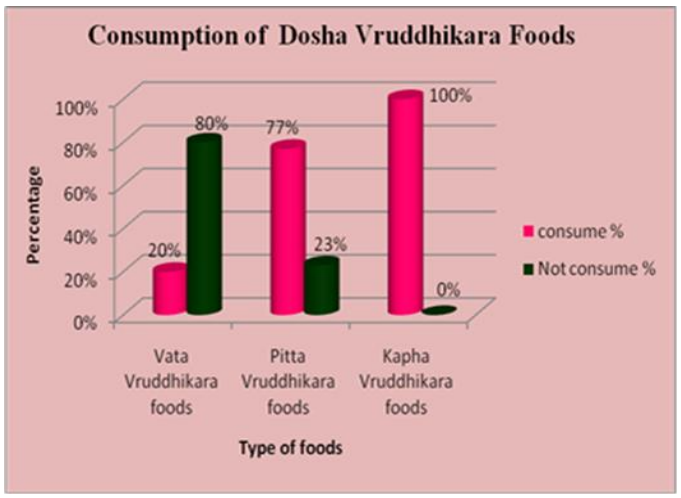

Fig. 5: Distribution of the Consumption of *Dosha vruddhikara ahara*

Distribution of the type of water consumption

53% of the patients were excessively consumed cold water (Figure 6).

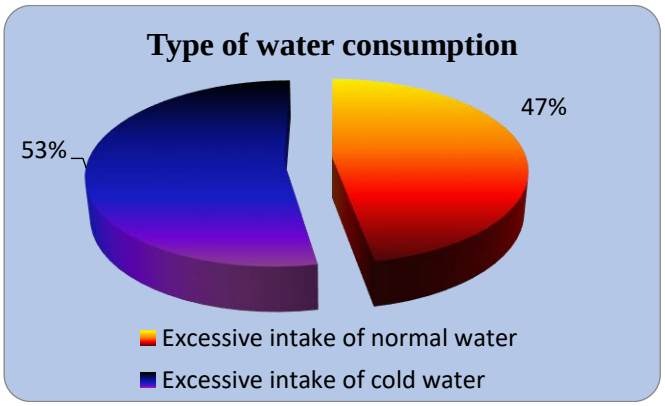

Fig. 6: Distribution of the type of water consumption

Behavioral habits

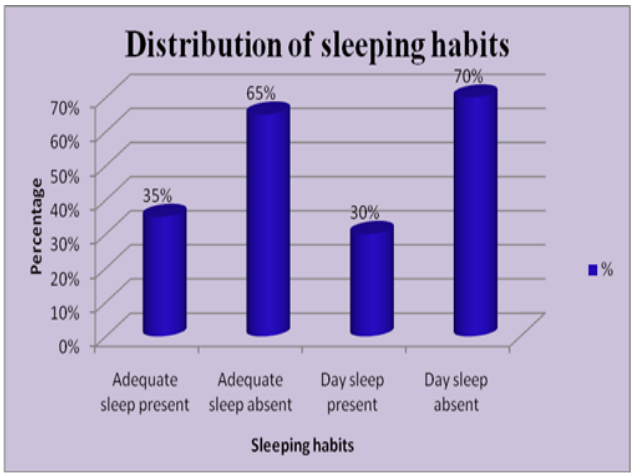

Fig. 7: Distribution of sleeping habits

It was revealed that 65% of the patients had not adequate sleep and only 30% of patients had day sleep (Figure 7).

Distribution of bathing time

Evening or Night bathing was recorded as 45% and 25% was recorded early morning bathing habit (Figure 8).

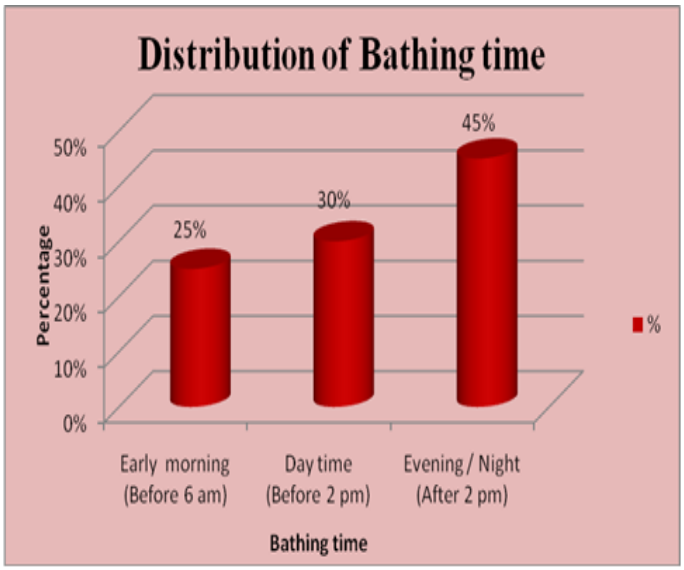

Fig. 8: Distribution of bathing time

Distribution of hair drying habit

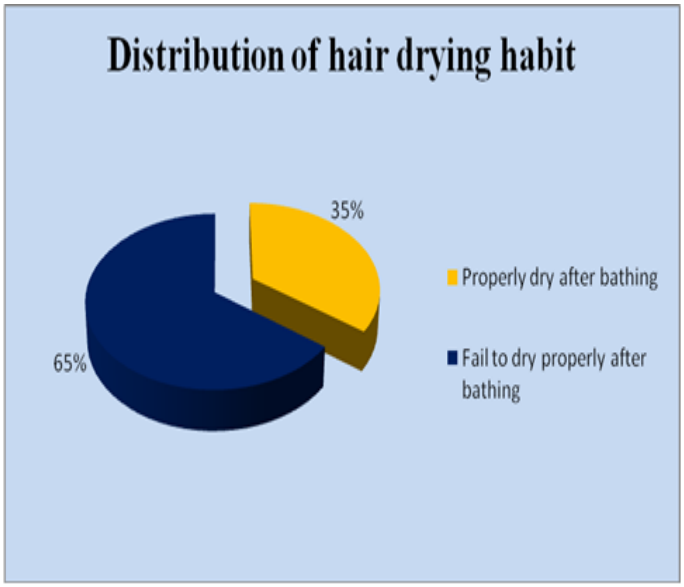

Fig. 9: Distribution of hair drying habit

65% of the patients had not properly dried hair after bathing (Figure 9).

Distribution of the use of chemical cosmetics

83% of patients had the habit of using chemical cosmetics (Figure 10).

Fig. 10: Distribution of the use of chemical cosmetics

Distribution of the patients according to exposure to the nature of environment

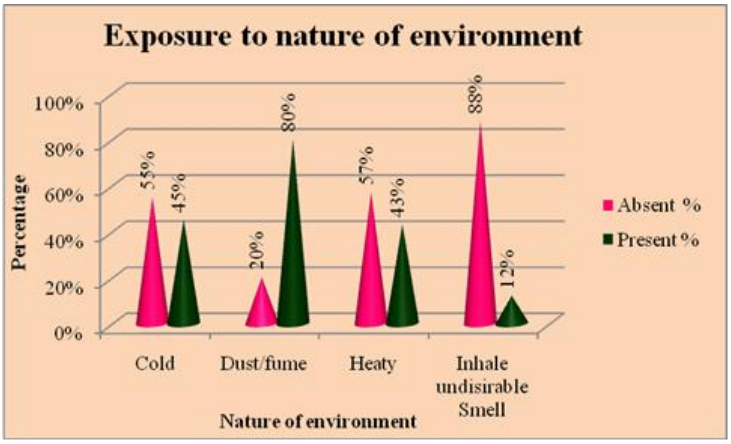

Fig. 11: Distribution of the patients according to exposure to the nature of environment

80%, 45% & 43% of the patients exposed to dust/fume, cold and heaty environment respectively.

Distribution of suppression of natural urges

53% of the patients were recorded as suppressing of the natural urges (Figure 12).

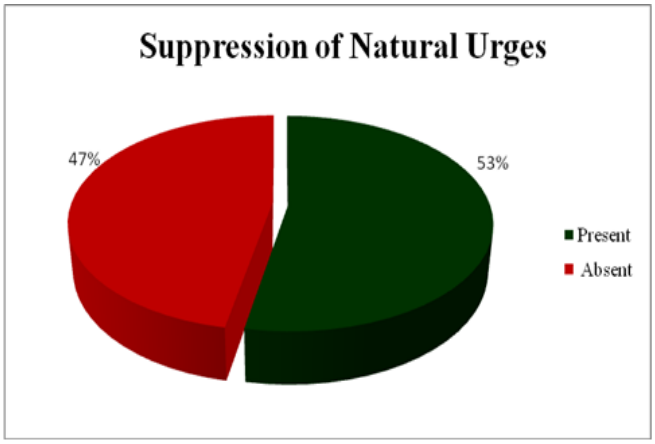

Fig. 12: Distribution of suppression of natural urges

Discussion

In this study 83% of patients were in 18 – 47 years age range. These age ranges belong to young adults age range. Hence *Kaphaja shirah shoola* is more common in young adults in this study that is same as in other countries in the world.

68% of patients were females in this study. It proves that prevalence of *Kaphaja shirah shoola* is more common among the females in this study and it is also same as in another countries in the world. 79% (*Kapha vata* 32%+ *Kapha pitta* 47%) of patients were possessed *Kapha* predominance *Prakriti*. It shows that *Kaphadosha* is closely related with *Kaphaja shirah shoola* and it is responsible for derangement of *Kapha* in *Shirsha*, the *Kaphasthana* according to Ayurveda anatomy and it increases the prevalence rate hence *Prakriti* and *Doshic* conditions are also similar (*Prakriti and Doshasama)* in *Kaphaja shirah shoola*.

In this study it was recorded that 58%, 25% and 17% were healthy weight, overweight and obese category of BMI. Here it shows negative correlation of BMI with *Kaphaja shirah shoola*. Only 47% of patients in this study had family history. It is difficult to conclude that presence of family history is having positive correlation on *Kaphaja shirah shoola* hence sample size is small.

Related to the dietary habits 93% were non vegetarian, 100% consumed *Kapha vruddhikara ahara* and 53% consumed cold water. By these results, it reveals that *Kapha vruddhikara ahara* and cold water aggravated the *Kapha dosha* to fulfil the *Samprapthi* of *Kaphaja shirah shoola*. As causative behavioral habits 65% less adequate sleep, 45% evening or night bathing, 65% fail to dry hair after bathing, 83% usage of chemical cosmetics, 80% & 45% exposure to dust/ fumes & exposure to cold environment, and 53 % suppression of natural urges were recorded. All behavioral habits mentioned above other than suppression of natural urges will cause to increase *Kaphadosha*, the initial cause to *Kaphaja shirah shoola*. Suppression of natural urges will derange *Vyanavata* which is situated all over the body and it is responsible to have pain in *Shirah* related to this disease with other associated factors.

Conclusion

Kaphaja shirah shoola is most common in young adults in this study and it prevails most commonly among females. The individuals having *Prakritis*, predominance of *Kaphaja* characters are more liable to have *Kaphaja shirah shoola*. It was found that BMI is having negative correlation with *Kaphaja shirah shoola* in this study, but it is necessary to carry out studies by increasing the number of patients to come to a final conclusion regarding the influence of BMI on *Kaphaja shirah shoola*. The dietary habits such as *Kapha vruddhikara ahara* and consumption of cold water and behavioral habits such as less adequate sleep, evening or night bathing, fail to dry their hair after bathing, usage of chemical cosmetics and exposure to dust/fume or cold environment by the individuals who are inherited *Kapha* predominant *prakriti*, will increase the prevalence rate of this disease. Hence considerable amount of having *Kaphaja shirah shoola* can be controlled by improving careful correct dietary patterns and behavioral patterns of the individuals.

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The Diversity of Indigenous Medicine of Sri Lanka: A Cross Sectional Study

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Abstract

Traditional Medical System in Sri Lanka comprises Ayurveda, Siddha, Unani, and *Deshiya Chikitsa*. *Deshiya Chikitsa* is a purely native kind of medicine that has been practicing since pre-historic period of Sri Lanka. The general objective of this study was to investigate diversity of indigenous medicine (IM) in the Moneragala District. Ninety registered physicians were selected from the population using purposive sampling method. Qualitative data collection methods were used for collecting primary data. The Moneragala District has rich diversity of IM and eighteen medical genealogies and 325 indigenous physicians were identified. The majority of physicians are unregistered with the Ayurvedic Medical Council. *Sarpavisha wedakama* and *Kadumbindum wedakama* are the wide spread branches that prevail in the Moneragala District. The other identified branches are demonology (*Bhutavidya*), treatment for stray-dog bite (*Jalabhitika*), abscess and sore (*Gedivana*), common ailments (*Sarvanga*), eye-diseases (*Akshiroga*), psychiatric disorders (*Manasaroga*) and skin diseases (*Charmaroga*).

Keywords: Diversity, Medical Genealogies, Indigenous Medicine, *Deshiya Chikitsa*

Introduction

Indigenous Medicine (IM) "*Sinhala Wedakama*" is a unique heritage of Sri Lanka coming over centuries based on a series of ancient indigenous medical literature handed down from generation to generation. In fact, Sri Lanka is proud to claim to be the first country in the world to have established systematic hospitals[1]. Some ancient cities of Sri Lanka; Polonnaruwa, Medirigiriya, Anuradhapura and Mihinthale still have the ruins of what many believe to be the first hospitals in the world[2]. Historically, indigenous physicians enjoyed a noble position in the country's social hierarchy due to the royal patronage granted to them by ancient kings. From this legacy, it was stemmed a well-known Sri Lankan saying: "be a physician if you could not be the king"[3]. Indigenous medicine of Sri Lanka comprises various indigenous healing systems that have been developed within societies before the time of modern medicine were forcefully introduced to Sri Lanka. Even today, Sri Lanka has numerous branches of Indigenous medicine such as traditional form of fracture healing, treatment of snake bites, ophthalmology, psychiatry and treatment of abscesses, wounds and cancers etc. which are said to be still effective and accepted by the community. Sarartha Samgraha, Vatika Prakaranaya, Deshiya Chikitsa Samgrahaya, Oushadha Samgrahaya and various Ola leaf manuscripts are some key written materials related to Sri Lankan indigenous medicine. In addition, there are many valuable medicines, treatment methods, beliefs and techniques in some families coming from generations which are still un-documented[4].

Sri Lanka had diverse forms of indigenous medicine for preserving well-being of the ancient society and has a rich intangible cultural heritage associated with traditional knowledge coming from throughout the history which bears features of native culture and protects the biodiversity of the natural habitats

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of the country.

Sri Lankan Indigenous Medicine (IM) is not merely a system of alternative medicine or health care system, but is a vast area of cultural heritage. It not only cares ailments, but it deals with culture, religion, norms, customs, values, ethics, rituals and also beliefs all of which fabricate Sri Lankan lifestyle. Indigenous medicine coined with traditional knowledge is complete knowledge systems with its own philosophy and logical validity which can only be understand by means of pedagogy traditionally employed by the people themselves.

There are several ritualistic practices performed personally as well as collectively for expelling out ill cause and gaining blessings of the God to maintain health. Every phase of therapeutic process is strengthened by a ritual or sorcery and personally monitored by the physician. He ensures the safety and efficacy of the treatment where most of the treatments are customized and individualized in accordance with patient's humoral uniqueness. Traditional physicians use minimum medicines to get optimal relief with the diversified use of medicinal preparations. They use same medicine with different forms of vehicles for various ailments[5].

Unfortunately, due to various reasons, the most of indigenous healing practices are not currently practiced. However, all these indigenous healing practices irrespective of the fact that they are documented or not, are to be investigated, studied, conserved and used sustainably for the benefit of future generations.

Research Problem

The Moneragala District is believed have rich heritage of indigenous medicine. People are still depending on indigenous healing practices for their primary health needs. Being an uncongested area, the Moneragala District has abundance of medicinal plants. Considering all the above facts, the research problem of this study has been formulated as follows. What are the diversities of indigenous medicine in the Moneragala District?

Objectives

The general objective of this study was to investigate diversity of indigenous medical practices including various healing practices, indigenous medical genealogies, techniques, medicines and beliefs in the Moneragala District and to study the challenges in conservation of indigenous medical practices. Specific Objective is to investigate different branches and genealogies (*Weda parampara*) available in the research area.

Methodology

The cross-sectional study was carried out from 2017 to 2019 in all divisional secretariats of the Moneragala District of Sri Lanka. The list of indigenous medical practitioners of various branches living in the Moneragala District was obtained from the Ayurvedic Medical Council (AMC). Further details were obtained from the divisional secretariats of the Moneragala District through *Ayurveda Sanrakshana Sabha* and the provincial Ayurveda department of the Uva province.

Ninety (90) registered indigenous physicians irrespective of their age, sex, ethnicity and the branch of indigenous medicine were incorporated in the study. Purposive sampling methods was used because of the fact that it can be logically assumed that the sample represent the population. The sample size was determined according to Cochran's (1977) formula[6].

Qualitative data collecting techniques such as in-depth interviews, field notes, key informant interviews, direct observations and questionnaire were used for collecting primary data. Key informant like provincial Ayurveda commissioner of the Uva province, Registrar of the Ayurvedic Medical Council, and chairperson of Ayurveda Conservation Councils of each divisional secretariat were interviewed[7]. The aim of the research was explained to the interviewees before they were interviewed and obtained prior informed consent verbally. The interviews and observations were initiated after receiving verbal approval from them.

The interviews were done at a time and place chosen by the interviewees which enables them to express

their perspectives and knowledge independently. The rationale for using multiple sources is triangulation of evidences which increase reliability of data and their collection. Secondary data were collected from manuscripts, Ola leaves, books, journals, research papers, internet, dissertations and theses. Qualitative data analyzing methods were used for the interpretations of data. The collected data were analyzed for themes from which conclusions were made. Data were analyzed by using SPSS software.

Results and Discussion

The Moneragala District is the second largest of 25 Districts of Sri Lanka with an area of 7133 km². The main occupation of those who live here is farming. Cultivation of land is linked to the monsoon. The savanna like plain has its share of wildlife such as elephants, peacock, fox, buffalo, deer and elk.

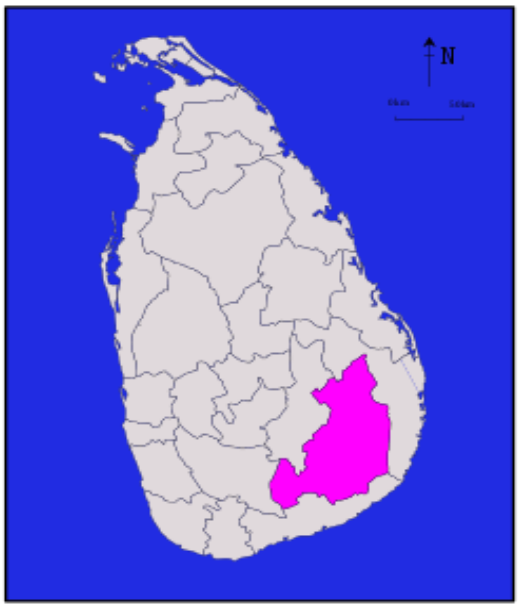

Fig. 1: The map of Sri Lanka and the Moneragala District (Source: Internet)

Total population of the Moneragala District was 451,058 at the census conducted in 2012 which is 2.22 % of the total population of Sri Lanka (DCS, 2012). The male population was 224,168 whereas the female population was 226,890. Population Density is 83/km^2.

Fig. 2: Divisional Secretariats of the Moneragala District (Source: Internet)

Table: 1: Registration, sex and family lineage (*Weda parampara*) wise distribution

Registration	%	Sex	%	Family lineage	%
Registered	48.30	Male	80.55	Yes	7.01
Not registered	51.70	Female	14.78	No	92.99

The total number of indigenous physicians belong to different branches living in the Moneragala District were 325. Out of them, 157 (48.30%) physicians were registered with the Ayurvedic Medical Council whereas the rest of the healers (168) (51.70%) were unregistered. Among the total population of indigenous physicians (325), 80.55% were males and 14.78% were females. The only 7.01% of physicians has direct relationship of family lineage of indigenous medicine (*Weda parampara*) whereas 92.99% of physicians have no such inherent genealogy of indigenous medicine. Therefore, it is concluded that very few numbers of physicians have been studying indigenous medicine from their own successors and their own family lineage of indigenous medicine is being gradually faded. Contrary, a large number of people are interested to

study indigenous medicine to become physicians who have no any relation to indigenous medicine. (Table-1)

Table: 2: Ethnicity, nature of practice and occupation wise distribution

Ethnicity	%	Nature of practice of IM	%	Occupation	%
Sinhala	99.23	Full-time	05.44	Physician	05.44
Muslim	0.77	Part-time	94.56	Farmer	92.44
Tamil	0.00	-	-	Clerk	0.38
-	-	-	-	Teacher	0.38
-	-	-	-	Postman	0.38

When considering the ethnicity, the majority of physicians was Sinhala (99.23%) followed by Muslim (0.77%). There was no single Tamil physician in the Moneragala District. The 94.56% of physicians were not doing treatment as their sole occupation whereas only 05.44% of physicians were engaged in full-time treatment as their occupation. By foregoing, it is concluded that males are predominantly involved in practicing indigenous medicine and Sinhala people are more dominating in indigenous medicine of Sri Lanka that is the reason to use "*Sinhala wedakama*" synonymous to indigenous medicine. The vast majority of physicians practice indigenous medicine part-time which may be multi-factorial (table-2). The actual occupations of the majority of persons were agriculture (92.99%), followed by clerical work (0.38%), teaching (0.38%), trading (0.38%), postman (0.38%) and full-time clinical practice (05.44%).

Considering the way of gaining knowledge of indigenous medicine (mode of transmission of indigenous medical knowledge), 5.44% of physicians learnt from father, followed by from uncle (0.77%), mother (0.38%) and grandfather (0.38%). The, only 7.01% of physicians has direct relationship of family lineage of indigenous medicine (*Weda Parampara*), whereas 92.99% of physicians has no such inherent genealogy of Indigenous Medicine.

Table: 3: Age and educational status wise distribution of data

Age	%	Educational status	%
20-30	4.66%	Below O/L	62.25%
31-40	17.50%	O/L passed	34.63%
41-50	19.84%	Up to A/L	05.09%
51-60	26.45%	Graduated	0.00%
61-70	17.89%	-	-
71-80	10.11%	-	-
81-90	03.11%	-	-
91-100	0.38%	-	-

Considering educational status, the majority of physicians (healers) had educated below the ordinary level of General Certificate of Education (GCE O/L) (62.25%) followed by O/L passed (34.63%), up to GCE A/L (05.09%) and no graduated (0.00%). When considering age of the total population, majority of physicians were within the age range of 51-60 (26.45%), followed by 41-50 age group (19.84%), 61-70 (17.89%), 31-40 (17.50%), 71-80 (10.11%), 20-30 (4.66%) and 81-90 (3.11%). The least percentage of physicians was belonged to 91-100 age group (0.38%). By forgoing, it clear that majority of indigenous physicians have no proper educational qualifications. (Table-3)

Diversity of Indigenous Medicine

Diversity is the term used to describe the state of being diverse or the range of different things. There are many fields of practices of indigenous medicine available in the Moneragala District.

Table 4: Registered/Unregistered indigenous physician in the Moneragala District

Divisional Secretariat	Registered	Un-registered
Sewanagala	12	07
Kataragama	02	06
Thanamalvila	04	03
Wellawaya	25	18
Buttala	09	10
Moneragala	21	13
Sayambalanduwa	21	09
Madulla	21	23
Medagama	14	36
Bibile	17	29
Badalkumbura	11	14
Total	157	168

Source: Survey Data

The table shows that 157 (48.31%) 'physicians' were registered with Ayurvedic Medical Council whereas 168 (51.69%) persons were unregistered. The table also shows the number of physicians in each divisional secretariat in the Moneragala District. The indigenous physician: patient ratio is nearly 1:2873. Unregistered physicians are also recognized as physicians by villagers where they live. In that context physician: patient ratio is nearly 1:1388. (Table 4)

Related to registered physicians *Sarpavisha wedakama*, and *Kadumbindum wedakama* were the wide spread branches that prevails in all eleven divisional secretariats in the Moneragala District. Other branches of indigenous medicine identified were *Sarvanga wedakama* (treatment for snake bite), *Gedi-wana-pilika wedakama* (treatment for abscess and wounds), *Akshiroga wedakama* (treatment for eye disease), *Manasikaroga wedakama* (treatment for mental disorders), *Pissubalu* or *Jalabhitika wedakama* (treatment for rabies), *Charmaroga wedakama* (treatment for skin disease), and *Bhutavidya wedakama* (treatment using intangible forces).

Table 5: Proportion of each different field wise distribution

Fields of IM	Number	Percentage
Sarpavisha	68	43.31
Kadumbindum	46	29.30
Bhuthavidya	02	1.27
Jalabhithika	02	1.27
Gediwana	03	1.91
Sarwanga	31	19.74
Akshiroga	01	0.64
Manasikaroga	02	1.27
Charmaroga	02	1.27
Total	157	100

Source: Survey Data

Among registered physicians, the majority of physicians in the Moneragala District belong to the field of *Sarpavisha* (43.31%) followed by of *Kadumbindum* (29.30%). The least number of physicians are in the field of *Akshiroga* (0.64%). The physicians related to the fields of *Bhutavidya*, *Jalabhithika*, *Manasikaroga* and *Charmaroga* are in equal number (1.27%) (Table-5).

Table 6: Proportion of each different fields (*parampara*) wise distribution

Divisional Secretariat	Registered physicians	Un-registered healers	Total	Percen-tage %
Sewanagala	12	07	19	5.84
Katharagama	02	06	08	2.46
Thanamalvila	04	03	07	2.15
Wellawaya	25	18	43	13.23
Buttala	09	10	19	5.84
Moneragala	21	13	34	10.46
Siyambalanduwa	21	09	30	9.23
Madulla	21	23	44	13.53
Medagama	14	36	50	15.38
Bibile	17	29	46	14.15
Badalkumbura	11	14	25	7.69
Total	157	168	325	100

Source: Survey Data

Irrespective of registration, the majority of physicians are living in the Medagama divisional secretariat (15.38%) whereas Thanamalvila is the divisional secretariat (2.15%) where the least number of physicians are living in the Moneragala District. Bibile (14.14%), Madulla (13.53%), Wellawaya (13.23%), Moneragala (10.46%), Siyambalanduwa (9.23%), Badalkumbura (7.69%), Sewanagala (5.84%), Buttala (5.84%) and Katharagama (2.46%) divisional secretariats reported to have moderate to a smaller number of physicians in reducing manner (table 6). It was observed by the researcher that a considerable number of "healers" who do treatments are not registered at Ayurvedic Medical Council (AMC) and reason for which is many-fold. The majority of both registered (48.30%)) and unregistered (51.70%)) "physicians" (healers) are related to *Sarpavisha* (snake bites) *wedakama* (43.31%).

Even the majority of registered indigenous physicians are not engaged full-time treatment having well established dispensary (*Wedagedara*). They have not exact time period assigned for treating patients. In spite of being registered as indigenous physicians; the majority of them doing other occupations such as farming, carpentry and iron work for living other than indigenous medical practice, all of which are labour dominant.

Although majority of healers do not do treatment, they are popularly engaged in rituals such as *Yantra*, *Mantra* and *Dehi-kepeema* (lime cutting) etc. which are exclusively not for curing ailments, but for other worldly needs. Though they are physicians, a majority of them does not appear to have an organized way of treatment that is expected from registered physicians. They are doing just a kind of home remedies using few nearby medicinal plants. Among the sample physicians, only one or few were examining or doing treatment when the researcher visited them. The majority of physicians live in very remote villages in the divisional secretariats where they belong to.

Although the majority of physicians do not appear to have an organized way of treatment that is expected from registered physicians, a handful of them have well established treatment centers (*wedagedara*) with necessary infrastructure. For example, physicians of *Galabedda weda paramparawa* are appear to be busy with treatments for *Kadumbindum* who have their own 'hospital' having both OPD and IPD sections. Their hospital is well-equipped and manned with trained workers, most of them being their own family members and close relations. Average of 20-30 patients of orthopedic casualties consult physician at Galabedda hospital that is situated at Dambagalle near Kodayana 12 km away from Moneragala.

RM Kalubanda, is a well reputed physician for fracture healing (*Kadumbindum*) who treats at his home (*Wedagedara*) at Dambakenella nearby Medagama. DHM Gunasekara, who is a physician of Sarvanga registration with AMC conducts his treatment centre at his home at Kumbukkana, 10 km on the way from Moneragaala to Buttala and who is a popular physician for treating *Grahani* and *Mandam* diseases (malnutrition in children). DM. Gunasekara is a physician having two registrations (*Akshiroga* and *Sarpavisha*) who does treatment at Badalkumbura. Almost all others do just a kind of home remedies and use a few nearby medicinal plants only. It was also seen that a number of physicians are registered in Ayurvedic Medical Council more than one branch of treatment.

Indigenous Medical Genealogies (*Weda parampara*)

In this study, eighteen (18) indigenous medical genealogies (*Weda parampara*) were identified. They are namely *Gamgoda Arawegedara paramparawa, Wellasse Kelekorala paramparawa* (*Sarwanga*), *Uva-wellassa Kelekorala Medagama Patthuwe paramparawa* (*Sarwanga*), *Tangalwatta paramparawa, Weligamarala paramparawa* (*Sarwanga*), *Danigala paramparawa* (*Charmaroga*), *Galabedda paramparawa* (*Kadumbindum*), *Rattanapitiya paramparawa, Thuttana paramparawa* (*Sarpavisha*), *Sapugolla Thapodanarama paramparawa* (*Sarpavisha*), *Wewethenna paramparawa, Pillegoda paramparawa* (*Sarwanga*), *Wellassa*

Ithanawatthegedara paramparawa (*Sarpavisha*), *Thalagangoda paramparawa* (*Sarpavisha*), *Hakmana Denagama Munasinghe paramparawa* (*Sarpavisha*), *Kamburugamuwe paramparawa* (*Eswedakama*), *Matara Yatiyana paramparawa* and *Neluwa paramparawa* (*Kadumbindum*).

When analyzing the above indigenous medical genealogies (pedigrees), it is seen that some of them having village names which are not in the Moneragala District. They are *Weligamarala paramparawa* (*Sarwanga*), *Hakmana Denagama Munasinghe paramparawa* (*Sarpavisha*), *Kamburugamuwe paramparawa* (*Eswedakama*), *Matara Yatiyana paramparawa* and *Neluwa paramparawa* (*Kadumbindum*). The ancestors of these indigenous medical families might have migrated to the Moneragala District from the Southern province. The ancestors of *Danigala paramparawa* is related to native people of Sri Lanka they are living in the Moneragama, Badulla and Puttalam Districts.

Conclusion

This study reveals that 325 indigenous physicians are living in the Moneragala District. The majority of healers are un-registered with the Ayurvedic Medical Council. The males dominate the total population within the age range of 51-60. Only very few physicians have studied indigenous medicine from their own successors. The majority of physicians are Sinhalese and farmers in full-time occupation. The majority of physicians possess educational qualification up to the Ordinary Level of General Certificate of Education.

The treating poisonous snake bites (*Sarpavisha wedakama*) and orthopedic casualties (*Kadumbindum wedakama*) are the wide spread branches.The other identified branches of indigenous medicine are; *Gedi-Wana-Pilika*, *Akshiroga, Manasikaroga*, *Pissubalu* or *Jalabhitika*, *Charmaroga, Sarvanga* and *Bhutavidya*. Many physicians widely use rituals complimentary to the indigenous medical treatment. The majority of physicians do not have organized ways of treatment that is expected from registered physician. The eighteen indigenous medical genealogies (*Weda parampara*) were identified in the Moneragala District; they do treatment on common ailments (*Sarwanga*), orthopedic casualties (*Kadumbindum*), skin diseases (*Charmaroga*), psychological diseases (*Bhutavidya*), snake-bites (*Sarpavisha*), and eye-diseases (*Es-wedakama*).

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The State of Traditional Medical Education at the College of Indigenous Medicine during the Post-Independence Period (1948-1960)

Abeyrathne R.M.

Abstract

The British introduced reforms in traditional medicine in the first part of the nineteenth century and laid the foundation to establish a formal pluralistic health care service in the country. Nevertheless, traditional medicine became a highly contested phenomenon in the aftermath of independence from 1948-1960. The objective of this study was to study how Sinhalese Buddhist nationalist politics impacted on shaping traditional medicine and how its activities influenced on the state of traditional medical education at the College of Indigenous Medicine in Colombo. This research project was carried out as a qualitative study at various institutes in the United Kingdom and Sri Lanka. The researcher of this study used a digital camera to film all relevant material at various institutes and organized them into logical themes and analysed them according to theme-list and content analysis methods. These study findings reveal that in the aftermath of independence, traditional medicine got entangled between national and liberal political ideologies of the main political parties. There were divergent groups who manipulated their own ideologies to promote traditional medicine during this period. Thus, the Sinhalese Buddhist group organized reform activities to regain their lost identity and revitalize *Deshiya chikithsa* over the other types of traditional medicine. Similarly, the pro-reform group with an open mind to reform traditional medicine along with the line of modernity advocated a more mixed methods to revitalize native. This political dichotomy on traditional medicine exited during this period became one of the most significant obstacles for the College of Indigenous Medicine to develop a sound and steady academic environment at the college.

Keywords: The British, College of Indigenous Medicine, Medical Education, Modernity

Introduction

Although the limited reforms that the British introduced during their reign to modernize TM in Sri Lanka, they contributed to the formalization of a pluralistic healthcare service in the country. However, as this study findings reveal that after independence TM became a highly contested political issue among divergent groups, especially Sinhalese Buddhists. In the postcolonial era, native nationalist movements in many colonized countries challenged the ways that modernity was inserted in their societies altered the lives of their people, and contributed to the collapse of both state and society. For example, through a series of linked essays on culture and politics in his native Jamaica and Sri Lanka, Scott states that 'post-colonialists operated by implicitly occupying the horizon of nationalist politics already defined by anti-colonial project[1].

Scott is correct to point out that politics in post-independent Sri Lanka embraced with anti-colonial nationalist activities because Sinhalese Buddhist nationalists demanded a reaffirmation of lost cultural identity, which happened as a result of a long colonial rule, through reforming the native art and culture. As this paper shows TM occupied a centre position in the main political discourse in post-colonial nationalist politics in Sri Lanka. This situation contributed to the development of two divergent nationalist impulses, which De Silva

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characterizes as the discourses of Sri Lanka nationalism and Sinhalese Buddhist nationalism respectively. The former is described as emphasising the common interests of all the island's ethnic and religious groups, where claims of groups were not considered in isolation but accommodated within a plural polity. The latter was based on a specific reading of the country's history, where a case was made for the protection of the interests of the majority Sinhalese Buddhist population, in relation to which Buddhist monks and lay leaders demanded that Buddhism and Sinhala culture be restored to the pre-eminent place that they had occupied in the period prior to colonial rule[2]. The objective of this paper was to discuss how successive government policies impacted on shaping TM education at the College of Indigenous Medicine between 1948 and 1960.

Methodology

This research project was conducted in the United Kingdom and Sri Lanka as a part of the doctoral degree of the author of this paper that was submitted to the University of London. Therefore, the material in this research paper derives from this research and other secondary sources. The information for this study was collected at various research institutes located both in the United Kingdom and Sri Lanka. These institutions included the British National Archives, the British National Library, the School of African and Oriental Studies, the Welcome Centre Library, the Sri Lanka National Archives, the Bandaranayake Ayurveda Research Institute at Maharagama, Sri Lank and the libraries of the Museum of Sri Lanka, the Institute of Indigenous Medicine of the University of Colombo and the University of Peradeniya.

After obtaining official permission, the researcher spent around two years collecting data at the above-mentioned institutes in the two countries. For this, the researcher was legally allowed to use a digital camera to film all relevant primary research material. Subsequently, all filmed material was stored into a computer and then printed thousands of pages at the Welcome Centre Printing Unit which was by then affiliated to the University of London. Moreover, the researcher had the privileged to use relevant sources from a number of individual collectors in Sri Lanka. The whole study was conducted as a qualitative research project. The collected data was organized into relevant themes and analysed them using two qualitative techniques known as theme-list and content analysis methods.

Post-independence politics and TM

An examination of the stance taken by each political party and its leaders on the subject of TM provides an insight into the impact of the socio-political developments on the destiny of TM in the first phase's of Ceylon independence. Interestingly, the UNP, and, especially, its first leader, D. S. Senanayake, held contrasting views on the country's political future and the field of TM. He opined that Ceylon should be governed as a liberal state, while at the same time, supporting the reform of TM from the very beginning.

D. S. Senanayake's continued support for the reform of TM was no doubt partly due to his active involvement with other leaders in demanding a revival of TM in the early part the twentieth century. As indicated in the previous chapter, the British colonial government appointed him one of the members of its first Board of Indigenous Medicine of 1926, which paved the way for him to play an important role in the opening of the College of Indigenous Medicine in 1929. In addition, he was actively engaged in the Ceylon Legislative Council's debates on matters pertaining to TM. For instance, he criticised the teaching of Western medicine to students of the College of Indigenous Medicine. Rather than promoting the study of TM, what the College had done over the past ten years was imparting the knowledge of Western medicine [3].

Moreover, the promotion of TM was a Senanayake family tradition for many years, and D. S. Senanayake's brother, F. R. Senanayake, was one of the key players in the Medical Fund, which was more instrumental in initiating the revival in the field than any other group during that period [4].D.S.

Senanayake further associated with the ongoing nationalist and temperance movements' activities until the country gained independence [5]. Similarly, D. S. Senanayake's son, Dudley Senanayake, and Sir John Kothalawala (nephew of D. S. Senanayake) continued to pledge their support for the promotion of TM in Ceylon.

The position taken by Bandaranayake and the SLFP on the subject of TM had a long-lasting impact on the shaping of the field throughout the twentieth century and beyond. Bandaranayake's unique contribution can be attributed, firstly, to his personal commitment, and secondly, to the different roles he played in the improvement of TM. Although, he hailed from a landed aristocratic family; he was anti-imperialistic from his younger age, and stood for the promotion of the common people's standard of living. He promoted TM as a member of the Ceylon Legislative Council, Minister of the Local government, Minister of Health, and Chairman of the Board of Indigenous Medicine. He was also the architect of the transfer of the College of Indigenous Medicine from an independent institute to a government institute in 1941[6].

In the post-independence era, Bandaranayake provided new momentum to the field of TM on the basis of the presumed affinity between TM reform and the Sinhala-Buddhist nationalist campaign in which he played the leading role. He was the Minister of Health in the Senanayake government from 1948-1951, but he left the party due to the government's alleged neglect of the majority rural population and his long existing political rivalries with D.S. Senanayake and other UNP members. He foresaw that it was the best time to launch a new political party that would advocate fresh economic, political, and social reforms and capitalise on the growing disillusionment with the UNP[7].

In 1952, he started the SLFP upon realising that there was no room for his communal based political agenda within the UNP. His inspiring oratorical ability, Oxford education, and choosing national over European wear, Buddhism over Christianity, and Sinhala over English, raised his status in the eyes of the masses and enabled him to organize a new political front known as the *Panchamaha balavegaya* (the five forces front), in which he unified *Sanga,* (Buddhist monks), *Veda,* (TM Physician), *Guru* (teachers), *Govi* (farmers), and *Kamkaru* (labourer). Thus, he linked the revival of TM with the ongoing larger social reform movement[8].

There were no drastic changes in TM-based education at the College of Indigenous Medicine in Colombo in the immediate aftermath of independence. The government led by Prime Minister D. S. Senanayake appointed the following members to the Board of Indigenous Medicine for managing the affairs of the College and Hospital: P. M. P. Abeysinghe, K. Balasinham, R. Buddhadasa, M. C. Chandrasena, R. S. S. Gunawardana (president), A. M. Mawjood, J. M. L. Mendis, U.B. Narampanawe, Senator A. R. A. Razik, A.T. Samather, Senator K.D. Sugathadasa, J. E. P. Wickramasinghe (acting Principal of the College of Indigenous Medicine), M. W. N. S. Wijesiri, A. William Wijerathne, and Muhandiram[9].

The committee comprised both physicians and influential community leaders form all ethnic and religious backgrounds. Although, nationalist leaders expected that the quality of the College and Hospital would improve after independence, things were stagnant, and there was little significant progress in the field of TM. In this unfavorable situation, the then principal of the College, with twenty years of yeoman service to promote TM in Ceylon, Captain A. N. N. Pannikkar, resigned (Dr. Pannikkar played a unique role in serving the cause of TM in Ceylon. He hailed from Kerala and had training in both Traditional and Western Medicine. In addition, while he was in Ceylon, he mastered Sinhala and Tamil, and acquired knowledge in TM of Ceylon. In appreciation of his service, the government conferred the title of Justice of Peace on him and Ceylon Honorary Citizenship after his retirement. His untimely death occurred due to a heart attack in 1950). J. E. P. Wickramasinghe replaced him as the acting principal of the College. Since he did not receive the support of the staff and students of the

College, he could not maintain their high standard. This situation continued until 1952[10].

The enthusiasts of TM expected that after independence the government would implement the recommendations put forward by the Das the Gupta Report of 1947 for developing the College and Hospital, but no such action was taken. Instead, the government appointed another committee in 1950, known as the Commission on Ancient Sinhala Medicine, to protect and promote traditional Sinhala Medicine[11].

The *Sinhala vedakama,* or, otherwise, known as the *Hela vedakama*, *Deshiya vedakama*, *Paramparika vedacama*, *Deshiya chikitsa*, and *Goda vedakama*, originated within the country prior to the advent of other traditions of TM. Buddhism and Ayurveda have made a considerable impact on the development of the *Deshiya chikitsa* for the more than two millennia of its existence. The uniqueness of this tradition of medicine is that it was passed down through generations of families, guarded and preserved as a family heirloom. The *Deshiya chikitsa* developed into a number of sub-branches of medicine during its long history to suit the local needs of the people [12]. They range from *Charma* (dermatology), *Daum pillissum*, (treatment for burning), *Es vedacama* (ophthalmology), *Kedum bindum* (bone fracture), *Gedi* (treatment of boil, carbuncle, and tumour), *Mandama* (malnourishment), *Manasika roga* (psychiatric treatments), *Pissubalu roga* (hydrophobia), *Sarpavisha* (treatment of snake bites), *Sarvanga* (general medicine), *Unmada* (hysteria), *Vataroga* (neurology, rheumatology, and paralysis), *Vidum pillisssum* (piercing and heat treatment) and to *Satva vedacama*, (veterinary), which include, *Ath* (medicine for elephant) and *Harak* (medicine for cattle). *Deshiya chikitsa* physicians often specialised in treating one or more disease groups in which they inherited from their family[13].

This study finds that a small group of informally trained TM physicians accused British officials of not recognising Sinhalese Medicine or *Deshiya chikitsa* as one of the formal sectors of TM in 1929, and not including academic courses on the subject in the academic curriculum of the College of Indigenous Medicine. This indeed was the main reason for a group of informally trained Sinhala Medicine practitioners in the post- independence era to demand the D. S. Senanayake government to constitute a committee to look into the ways in which how the government should involve in promoting *Deshiya chikitsa*[14].

In 1950, Bandaranayake, the then Minister of Health and Local Government, appointed the following members to the committee to carry out its mandate: R. S. S. Gunawardane, A D. Jayaweera (secretary) C. W. Kannangara (Chairman), F. O. Obeysekare, Dr. (Western) J. M. L. Mendis, the Rev. Palannoruwe Wimaladharma, G. H. C. Somarathne, and P. A. WeerawardanaPathiraja[15]. The role played by Bandaranayake in appointing the committee was more significant than that of D. S. Senanayake due to his close association with the Sinhala Buddhist nationalist movement. What Bandaranayake, as a person involved in reforming TM in the 1930s, should have done was not to appoint a new committee, but implement the recommendations presented by the Das Gupta Report of 1947.

The committee published notices in newspapers and gathered information from the public, conducting interviews with 49 persons, including well-known medical practitioners, and held twelve meetings, towards the completion of the committee report[16]. The contents of the committee report reveal that its members were extremely critical of the conduct of the College and Hospital. They were of the view that the main purpose of establishing the College should have been to use state assistance to develop TM traditions that were specifically developed within the country, that is, Sinhala Medicine, not the Ayurveda, Siddha, and Unani, traditions, which were imported from India and Arab countries. They protested that what the authorities had been doing over the years was teaching Ayurveda, Siddha, and Unani while recruiting staff members with Indian qualifications, disregarding the fact that they did not have any knowledge of Sinhala Medicine[17]. This shows the degree of their resentment towards the

College and their attitude, I would say, motivated by the ongoing nationalist politics in the 1950s.

Some of the criticisms made by them were unfounded because the authorities of the College later introduced some components of Sinhala Medicine into the course curriculum after a long struggle by some practitioners of Sinhala Medicine. Nevertheless, it was true that the College did not provide practical training to students in the field of Sinhala Medicine on its premises. The committee members opined that the government should have converted the College and Hospital into institutes that provided training in Ayurveda, and given priority to Sinhala Medicine. In addition, the committee recommended that the government establish separate training colleges for Siddha and Unani medicine, based on the recommendations made by the Das Gupta Report of 1947. The committee members were not entirely dogmatic, and favoured student training in the use of modern medical equipment borrowed from Western medicine, such as the stethoscope and thermometer, and with the examination of blood, urine and faeces[18.]

When examining the statements and revelations made by the committee members on the affairs of the College and Hospital, one can find that their criticisms were motivated by Sinhala Buddhist nationalist politics of the 1950s. They criticised the recruitment of staff members with Indian qualifications, who did not have knowledge of Sinhala medicine. In fact, some of the Indian trained Ayurveda physicians recruited by the College were reputed practitioners of Sinhala Medicine too. For Example, Pundit G. P. Wickramarachchi, who had Indian training, was well versed in both Ayurveda and other numerous TM traditions of Ceylon, and is considered to be the most influential personality of the Ayurveda renaissance in Ceylon[19].Furthermore, the College was generous enough to recruit a number of Sinhalese Medicine physicians, not just as general practitioners, but also as specialists in the field, since the establishment of the College in 1929. Among those prominent persons, P. M. P. Abeysinghe, D. H. Samarasinghe, M. S. Samarasinghe, L. B. Saranelis Silva, and Sathyaloka Wijesinghe contributed enormously to the integration of Sinhala and Ayurveda traditions of medicine in Ceylon[20].

The ongoing political power struggle and internal rift within the D. S. Senanayake government and the anti-government movement in the early 1950 had a negative effect on TM in Ceylon. As the Minister of Health and Local Administration, Bandaranayake criticised D. S. Senanayake's government for not allocating enough resources for the development of TM. Similarly, the Minister of Trade, Thomas Amarasooriya, believed that there should have been more efforts to integrate Western medicine and TM[21]. Eventually, Bandaranayake left the D. S. Senanayake's government along with his *Sinhala Mahasabha*, and formed the Sri Lanka Freedom Party (SLFP) in 1952. This resulted in D. S. Senanayake becoming the acting Minister of Health in the same year (later he nominated retired army General E. A. Nugawela), and promised reforms in TM, and raised its standard to the level of Western medicine. As the first step, D. S. Senanayake advised his government's legal draftsman to design a new bill that would encompass the most important points from all the previous reports. His plan was to constitute a TM physicians' professional body similar to the British Medical Association [22].

The most significant decision made by D.S. Senanayake was to appoint two prominent figures in the field of TM to spearhead the College and Hospital and the Board of Indigenous Medicine in 1952. He appointed Dr. R. B. Lenora, a one-time deputy principal of the College, and a physician qualified in both traditional and Western medicine, with Indian and British training, to be the principal of the College and chief physician of the Hospital on the 15 of May 1952 [23]. At the same time, D. S. Sennanayke nominated the Rev. Malewana Gnanissara Thero, a reputed TM physician, to be the Chairman of the Board.[24]. The other members of the Board were: R. Buddhadasa, M. C. Chandrasena, K. Kanakarathnam, G. H. D. Kumaradasa, R. B. Lenora, J. M. K. Mendis, K. M. H. Mohomod Sali (Parliamentarian), S. M. A. Rahaman, A. Rathnapala

Marasinghe, K. V. D. Sugathadasa, and M.W. M. S. Wijesiri. It was considered that the two appointments were appropriate and timely, and as the Prime Minister himself opined, he appointed the two most credible leaders who would take the filed forward. In making the two appointments, he made the following remarks to the Rev. Gnanissara:

> We are to pave a new path for the betterment of the Ayurveda. I have already decided that the Ayurveda system should be improved in order to achieve its fullest success. To do this, it is sure; we have to spend millions of rupees, yet we need not mind what such an important national cause might cost. My government is ready to provide every possible help towards the improvement of the Ayurveda medical system. But I must say one thing to you; Dr. Lenora and you must take up the responsibility to draw out a well-considered plan in order to uplift the position of Ayurveda [25].

Clearly, D. S. Senanayake had a grand vision on how the government should promote TM in the country. It is clear that he had much more vision than his former Minister of Health, Bandaranayake. On another occasion, he had said that 'if I were to live for one more year I would consider it my sacred duty to restore Ayurveda to its pristine glory'[26]. However, before implementing any of his vision to promote TM, D. S. Senanayake died quite unexpectedly in 1952 [27].

After assuming duty as the principal of the College, Dr. Lenora, with the help of the members of the Board, spent a considerable amount of time putting the two institutes back on track. As a person with training in both Western and medicine TM, he opined that TM in Ceylon was lagging far behind Western medicine. Furthermore, he believed that if the former were to be more efficacious, it should incorporate modern scientific methods of diagnosing diseases. He stated, 'I would like to appeal to my Ayurveda Colleagues to seek more light and not accept blindly every method as infallible just because a *Rishi* proclaimed it, but to be more critical and learn about all modern advances in science, not simply accept all that is modern simply because it is modern'[28].

He designed a new system, known as the Lenora System, to train qualified and technologically advanced graduates to teach and practice TM in Ceylon. To develop the new system, he incorporated some of the recommendations made by the Das Gupta report into his own proposals. Most importantly, he restructured the existing academic and practical programmes at the College and Hospital by attending to the following parameters: duration of training, staff development, technology, research, admission criteria of the College, laboratory, hospital, appointment of a western physician, and nursing [29].

Dr. Lenora extended the four-year academic programme to five years, so that, students would be trained in modern scientific methods [30]. To this end, he installed an X-ray machine at the Hospital. He expected that the longer time students spent at the College would enhance the student-teacher interaction [31]. Concerning staffing, he suggested that it was more sustainable to recruit new staff members with training in Western medicine to the following fields: surgery, gynaecology obstetrics, hygiene and sanitation, hysteria, micro-biology, rabies, snake toxicology, tuberculosis, eye diseases, physiology, pathology, paediatrics, legal medicine, autopsy, and cancer. In addition, the Lenora system proposed the recruitment of five Sinhalese Medicine specialists to teach at the College [32].

Since Ayurveda has an extensive field of Materia Medica, Lenora recommended that the government establish a research institute to conduct scientific experiments so as to avoid the high cost of importing medicines [33]. For such a project to be successful, qualified scientists would have to be employed in the fields of pharmacology, microbiology, and physiology. Since it was too expensive to set up such an institute within a very short period of time, it was suggested that collaborative projects should be initiated with other established institutions, particularly the Medical

Faculty of the University of Ceylon and the Medical Research Institute in Colombo [34].

Addressing the students' deficiencies in general medical knowledge, the Lenora system formulated a new scheme of admission to the three curricular streams, Ayurveda, Siddha, and Unani, in order to improve the quality of College graduates. Accordingly, candidates were required to have passed the High School Certificate Examination in the Sinhala medium, with English, or the same examination in the English medium, with Sinhala, to enter the Ayurveda section of the College. In addition, either the Oriental Intermediary or Higher-Level examination with English was recommended as an extra qualification for admission. Similarly, the best results of the Pirivena Examinations were also considered a fitting qualification for admission to the Ayurveda division of the College. The High School Certificate Examination in the Tamil medium, with English, and the same Examination in the English medium, with Tamil, and the *Bala and Pandita,* examinations were recommended as the basic qualifications to get into the Siddha section of the College. Finally, the Senior School Certificate Examination with English was proposed as the standard requirement to enter the Unani section of the College[35]. It seems that the salient feature of the proposed scheme of admissions to the College was an emphasis on English for providing a superior introduction to new medical developments.

In order to improve the standard of practical training in the clinical field, the Lenora system proposed that the necessary clinical sessions should be provided both in the in-patient and outpatient departments, since such practice had not been available before. The purpose was to provide ample opportunities for students to gain first-hand experience in diagnosing diseases from specialists in the relevant fields [36]. The number of patients both at in-patient and out-patient departments kept increasing, and there were serious shortages of staff with proper training to provide medicine, maintain clinical records, and address the other needs of the patients. The new scheme proposed to recruit six nurses and three female matrons to supervise the nurses. In parallel to the effort to improve the quality of the nursing service, the Lenora system recommended the recruitment of six more attendants to maintain hygienic and sanitary conditions in the Hospital and enhance the quality of student training [37].

Lenora also recommended the recruitment of a full-time physician with western medical training at the Hospital to diagnose diseases that TM physicians could not identify, inspect the conditions of internal organs, and provide anaesthesia for patients undergoing surgery. It was also hoped that the physician would do some teaching [38]. Lenora's final proposal was that the government establish a laboratory at the College to help students and physicians use modern technology and analyse data from modern scientific laboratories to diagnose the causes of certain diseases, especially communicable diseases [39].

Lenora believed that many of his proposals were based on modern science, which, although new to the field of TM, was the way forward for education, health care services, and research. He argued that 'organizations for promoting scientific knowledge cry from house tops for dissemination of scientific knowledge, and it is inhuman to think that the physicians who are in-charge of 75% of the population are told to close their eyes where science is concerned, by a section of the very people who cry out for advancement of science'[40].

Lenora attributed the apparent progress in TM in Indian universities to the adoption of certain elements of modern science in the training of graduates, practitioners, pharmacists and researchers in the field. He strongly believed that similar measures should be implemented in Ceylon, not to destroy, but to popularise TM. Accordingly, he offered two options to the government regarding his proposals for developing TM in Ceylon. First, he thought that the government could provide the modern paraphernalia that he proposed. If the government would not furnish the required equipment, it was better, he believed, to appoint less competent informally trained physicians without an understanding of modern scientific achievements to run the two institutes [41]. Lenora also believed that

the informally trained TM physicians were rather backward, selfish, and slow to adopt new knowledge from other traditions, let along disseminate their knowledge. He declared in this regard that,

> Many a valuable drug or method of cure has been lost by the owner's tragic belief that he would rather carry it to his grave than divulge it to another. But the mentality of the Western Practitioner is quite the contrary. In spite of Quinine being able to cure an attack of Malaria, they were in search of better and yet better drugs and evolved, Mepocrine, Paludrine, Pyrimethamine, and Chloroquine and still in the path of research and more research into the better unknown[42].

When analysing the details in the Lenora system, arguably, it was impractical to super impose these changes because as we witnessed in the previous chapter, a number of similar attempts in the past failed due to in-fighting among various interest groups involved it promoting TM. Yet, Lenora believed that the training in both Ayurveda and Western medicine would eventually produce the professional leadership needed to carry out reforms in the field. Furthermore, he had the social and political capital necessary to push forth his programme. As mentioned earlier, many, including D. S. Senanayake, held Lenora in high regard. And indeed initially conditions seemed favourable. However, with the passage of time, Lenora's programme was subject to criticism and his system was not fully implemented [43].

Lenora and the Chairman of the Board of Indigenous Medicine, the Rev. Malewana Gnanissara, and the Board members summoned a public meeting to hear the reaction of Sinhala Medicine, Ayurveda, Siddha, and Unani practitioners and their professional union leaders to the new proposal on the 21st September 1952. At the meeting, both the Chairman and Lenora commented on the proposal in Sinhala and English. At the end, the audience approved the recommendations and representatives of the 134 different TM based professional unions, who attended the meeting, sent a letter with their signatures to the government [44]. The then Minister of Health, E. A. Nugawela, discussed the importance of the Lenora system with a reporter of the *Dinamina* newspaper, explaining that he would implement the system if the members of the Board of Indigenous Medicine approved it [45].

In addition, the newly formed SLFP of Bandaranayake, and the socialist *Lanka Sama Samaja* Party leaders, including W. Dahanayake and Robert Gunawardhana also backed the proposal [46]. TM was a politically contested issue and both right and left wing politicians had to stake a position.

The first step of implementation was the appointment of new members to the Board of Indigenous Medicine in 1953. They were M. C. Chandrasena, K. Kanakarathnam, D. H. D. Kumaradsa, the Rev. Malewana Gnanissara (chairman), M. E. H. Mohamad Ali (Member of Parliament), S. M. A. Rahaman Rathnapala Marasinghe, K. V. D. Sugathadasa (Member of Parliament), and W. N. M. S. Wijesiri. As an enthusiast of both TM and the Lenora system, the Chairman, with the approval of the Board and the staff of the College, decided to change the duration of academic training from four to five years and to upgrade the facilities at the hospital to meet the needs of fifth-year students [47]. The Board also designed a six-year development plan to facilitate the presentation of Lenora's proposals to the Ministry of Health. Under the six-year development programme the Board recommended the building of a new block with two lecture halls, the registering of TM physicians, the preparation of TM-based pharmacopoeia and a training course for attendants at the Hospital[48].

Jayathilake stressed the government's positive response. The College's students' enthusiasm for the Lenora system contributed to arousing anger among a segment of informally trained TM physicians. Initially, they expressed their opposition quietly. They feared that the proposed reforms would undermine their professional status and that the integration of the two systems of medicine would destroy the authenticity of TM. He further stated that

the majority of them were quacks, who abused TM for personal gain [49].

Conclusion

This article focused on the major events, controversies, and initiatives introduced by successive governments to promote TM in Ceylon between 1948 and 1960, and on Sinhala Buddhist nationalism that exerted a major influence upon the configuration TM. The main political parties, UNP and SLFP, adopted a more pragmatic approach to matters relating to TM as a means to maintaining their popularity and achieve their future political ambitions. Bandaranayake was more successful than Senanayake and Kotalawala in leveraging the issue of TM. Bandaranayake took advantage of the volatile political situation and made TM into an integral part of his nationalist movement.

Bandaranayake closely associated with TM practitioners to promote his nationalist political party agenda because the Sinhala Buddhist nationalist movement provided a suitable platform for TM practitioners to express their grievances against the marginalized social position experienced by them in the backdrop of the spread of Western medicine. Bandaranayake left the Senanayake-led government in 1952 and many informally trained TM practitioners, who were against the establishment of the College of Indigenous Medicine, formed the *Panchamaha Balavegaya*, and helped Bandaranayake come to power in 1956.[1] This was the same group that pressurised Bandaranayake to appoint a committee to look into the state of Sinhala Medicine when he was still the Minister of Health in the UNP government in 1950. Bandaranayake appointed a committee to look into Sinhalese medicine, rather than the TM of all ethnic groups in Ceylon. In appointing this committee he found an excuse for not implementing the recommendations put forward by the Das Gupta Report of 1947.

One consequence of the embroilment of TM education in the ongoing nationalist politics was the intensification of conflict between political fractions, TM practitioners, academic staff and students of the College of Indigenous Medicine. Another consequence was that formally and informally trained practitioners bitterly contested TM education. Members of the two groups tried to garner the support of politicians, the public, and the media. Informally trained practitioners sought support from politicians and the Ceylon Ayurveda Congress for their struggle to stop the proposed reforms in TM education. By contrast, modernist groups drew on politicians, including Jawaharlal Nehru, as well as modern scientific evidence.

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A Comprehensive Review on *Ratha taila* for Management of *Rathagaya* namely Infant/ Childhood Atopic Dermatitis

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Abstract

Ayurveda is mainly focused on preventive and curative aspects of health. *Ratharoga/ Rathagaya* is a disease that commonly occurs within infants and children, which can correlate with the *Charmadala* in Ayurveda and atopic dermatitis in Paediatrics. According to Traditional Medicine, *Ratha taila* is the commonest external application for *Rathagaya* with *Ratha kalka* internally. This study aims to supply a comprehensive review on *Ratha taila* by analyzing the suitability of the ingredients theoretically, through their Ayurveda and modern pharmacodynamic properties and actions for *Rathagaya* with the modern correlation to atopic dermatitis. The review was conducted by referring related textbooks and online research articles and by analyzing the pharmacodynamic properties and actions listed in each ingredient of *Ratha taila.* The recipe mentioned under the 20th chapter of the 1st volume of the Ayurveda Pharmacopeia was used. Upon analysis of the ingredients and the base oil of *Ratha taila,* it comprises of *Pitta shamaka*, *Tvachya* and *Raktha shodhaka* actions at a higher ratio owing to their *Rasa, Guna, Veerya, Vipaka* and *Dosha karma* comparatively. As per modern medicine, pharmacological actions such as anti-inflammatory, antimicrobial and antioxidant actions present in these ingredients are vital to skin health. *Ratha taila* contributes to pacify the other *Dosha* since *Kushtha roga* (skin disorders) have *Tridosha* origin. It can be concluded that *Ratha taila* is therapeutically useful in the management of *Rathagaya* as a unique external application on the skin.

Keywords: *Ratha roga,* Atopic dermatitis, *Ratha taila, Pitta dosha,* Sri Lankan Traditional Medicine

Introduction

Ayurveda, the main indigenous medical system of India has its roots entwined with the Traditional Medical system in Sri Lanka. This has been called *Deshiya Chikitsa* since the time of creation. Therefore, a great fusion of treatment practices is present to treat ailments through combined modalities of both systems. Ayurveda and Traditional Medicine (TM) have survived for centuries maintaining their authenticity by preserving time-tested potent medical practices. *Rathagaya* is a disease entity mentioned in Sri Lankan TM that mostly occurs within infants or children. It can be correlated with atopic dermatitis (AD) in Paediatrics and *Charmadala* in Ayurveda. According to TM, pathogenesis of *Rathagaya* can be described as simultaneous aggravation of *Pitta dosha* and vitiation of *Raktha dhatu* of the child. *Ratha taila* is used as an external application to pacify the *Pitta dosha* and to purify the *Raktha dhatu*[1]**.** Ayurveda Pharmacopoeia Volume I, chapter 20, *Taila Khanda* mentions more than one recipe for *Ratha taila*[2,3]. *Ratha taila* comprises *Wel keppetiya Kola (Idunu), Rathmal kekulu, Kapu kola* and *Pol kola yusha (Amu)* as the main ingredients and *Tila taila* (sesame oil) as the base oil. The ingredients are mostly comprised of *Tvachya, Tridosha shamaka* properties as well as *Kushtaghna, Kandughna, Shothahara, Daha prashamana* and especially the

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Raktha shodhaka actions used for the conditions due to vitiation of blood[1]. The quality, safety and efficacy of *Ratha taila* for the management of *Rathagaya* need to be analyzed by a theoretical review which has not been conducted up to date. This review was undertaken in order to bridge this knowledge gap. Furthermore, it provides various clinical approaches related to *Rathgaya*, including *Ratha taila*. The study also evaluates the time-tested knowledge and verifies its relevance to modern-day which had been passed down over the generations. The suitability of *Ratha taila* for the treatment of *Rathagaya* is justified as per the norms of reverse pharmacology[4].

Methods and Materials

This research was done by studying the online research articles, reports on ResearchGate, PubMed®, Google Scholar and international research journals in Ayurveda and TM (inclusive of research papers related to *Rathagaya* and atopic dermatitis), referring to some authentic books in Ayurveda, Sri Lankan TM, Paediatrics and Ayurveda Pharmacopeia. *Ratha roga, Rathagaya, Taila,* Dermatitis, Atopy, Skin, Paediatrics were the relevant search terms used. Children who are between the ages of 1 to 16 with a history of atopy are the inclusive facts while congenital skin diseases, carcinomas, kidney disorders, atopic dermatitis in adulthood and past allergic history of external applications are the exclusive facts.

Observations and Results

Ayurveda and Traditional Medicine in Sri Lanka

Ayurveda is called the science of life. *Ayu* means life and *Veda* means science[5]. It is not just a system of medicine but a holistic approach based on Indian philosophy dating back to the 12th century BC. Its main objective is to accomplish physical, mental, social and spiritual well-being which defines a healthy individual beyond the definition put forward by World Health Organization (WHO)[6].

Sri Lanka has its own, traditional system of medicine and Ayurveda medicine as well. The nomenclature of the term 'Ayurveda' used in all traditional medical systems in Sri Lanka including Ayurveda, Unani, Siddha and *Deshiya Chikitsa* according to the Ayurveda Act, No. 31 of 1961[7]. The methods of treatment of these two systems (Ayurveda and TM) are very comparable in terms of systems and principles. In TM, they use recipes handed to them by their ancestors. Those build upon individual practical experiences of specialized expertise in each branch of Sri Lankan TM which has looked after the health of Sri Lankan people for thousands of years. Currently, it is being called *Deshiya Chikitsa* which resembles the treatment system of the country itself. Sri Lanka is the only country from the region of Southeast Asia which, the traditional medical community is used along with the Ayurveda[8].

Introduction of *Rathagaya*

In *Charma roga chikitsa* and *Gedi-Vana-Pilika*, it's mentioned about various types of skin disorders that are common in adults and children[6]. But in TM there is a disease called *Raktaja roga* or *Rathagaya*, which includes many skin diseases that appear in childhood[9]. *Ratha* means blood or blood related and *Gaya* or *Roga* means ailments or disease. Therefore, *Rathagaya* is a skin disorder related to vitiated blood, described in Sri Lankan TM that broadly covers most skin diseases in children.

Etiology of *Rathagaya*

There are two main etiological factors *(Nidana)* of *Rathagaya*

1. Etiology related to the pregnant or lactating mother

Going against *Garbhini paricharya* (code of conduct that should be observed in pregnant period); consumption of foods and drinks like alcohol, hot and spicy foods that can lead to *Raktha* (blood) vitiation. Moreover, unhealthy lifestyles which are deviating from the *Svastha vritta* (healthy lifestyles), psychic conditions like *Lobha* (greediness), *Irshya* (envy), *Krodha* (aversion), *Bhaya* (fear) etc., *Kushta, Peenasa* and *Tamaka shvasa* like *Rasa* and *Raktha* vitiated conditions in

mother also affect the growing fetus and results in *Ratha roga.*

2. Etiology related to the infant

Ksheera dosha (infant nourished by *Pitta* vitiated breast milk), malnutrition and unhealthy dietary habits, congenital malformations, *Sukshma krimi* (microbial infections) and poor hygiene, environmental factors like polluted by chemicals and radiation can affect the mother as well as child directly[10].

Classification of *Rathagaya*

As mentioned in Figure 1, *Rathagaya* can be classified in two main ways; according to the site of lesion (external and internal) and signs and symptoms.

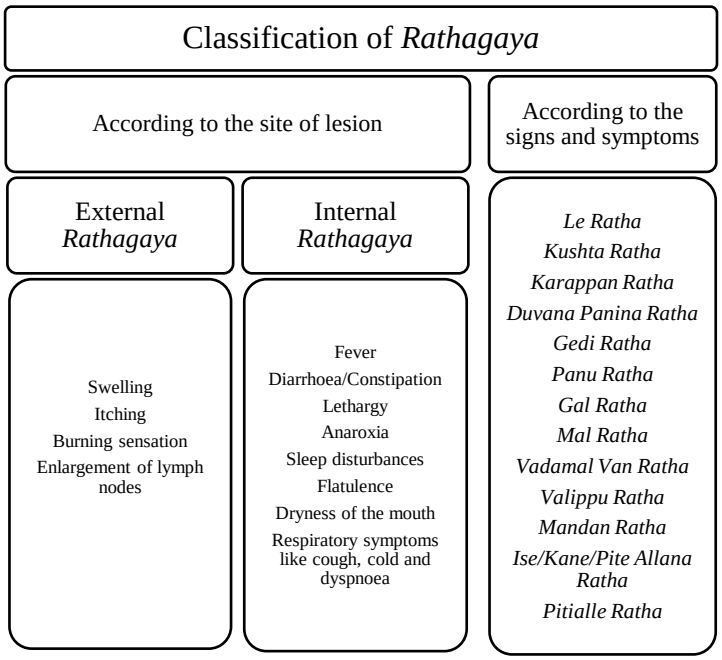

Fig: 1 - Classification of *Rathagaya*

External *Rathagaya*

Common sites of external *Rathagaya* are the scalp, face, neck, upper and lower limbs, groin, below the scrotum and all over the body. There are different types of lesions such as macules, papules and pustules[11]. Complications of external *Rathagaya* include secondary infections, septicemia, malnutrition, immunodeficiency, stomatitis, rhinitis, convulsions and rheumatoid arthritis.

Internal *Rathagaya*

Internal *Rathagaya* is linked with clinical signs and symptoms such as fever, lethargy, anorexia, alterations in bowel habits (constipation or diarrhoea), flatulence etc. as shown in Figure 1.

Line of treatment

Practicing daily oil massage *(Abhyanga)* is routine care for newborns on their proper growth and development. It involves oil application and massage, first on the head then the palms and soles followed by the whole body. The benefits of massage include the elimination of bad body odour, heaviness, drowsiness, itching and anorexia[12]. Treatment protocols of *Rathagaya* are summarized in Table 1.

Table 1: Various treatment protocols for *Rathagaya*[11, 13]

Treatment protocols of *Rathagaya*

Preventive/ *Ratha prathishedhaya*		**Curative/ *Ratha prathikaraya***	
Mother	Infant/ Child	Mother	Infant/ Child
Raktha shodhana	*Ratha kalka*	*Raktha shodhana*	Herbal bath
Avoid poor hygiene		*Anulomana (Mala)*	*Ratha taila*
		Sthanya shodhana	*Visarpahara, Pinda, Neelyadi, Seethodaka, Sarvavishadi taila*
			Ratha kalka (internal)

Charmadala

Charamadala is not distinctly mentioned in authentic Ayurveda books, but this disease is described in the *Charmadala roga adhyaya* under the *Khilasthana* of *Kashyapa Samhita*. It can be correlated to a certain extent with *Rathagaya* or *Ratha roga*. But the *Charamdala roga*, mentioned in chapters of the *Kushta roga* of other *Samhitas*, is different from the *Charamadala roga* mentioned in the *Kashyapa Samhita*. It is mentioned as '*Vriddhi machcharmadalam'* which means constantly

increasing. It has clinical features such as creeping erysipelas, excessive burning sensation, developing in parts of the child's body that bring about great discomfort to the child. *Charmadala* has an etiology similar to *Rathagaya* mentioned in TM. *Charmadala* can be classified as *Vatika, Paittika, Sleshmika* and *Sannipatika*[14]. The diseases like *Phakka, Visarpa* of children along with the pathogenesis and *Charmadala* have not been described by any other authors[15].

Atopic Dermatitis (AD)

Charmadala or *Rathagaya* can be correlated to AD in infants and childhood which is quite similar in onset, age, causative factors and clinical features. It is an acute, sub-acute or chronic recurrent endogenous eczema, characterized by dry and itchy skin. The etiology is unclear, although a genetic predisposition is an important factor. Immune changes include high allergen-specific IgE levels and lymphocyte abnormalities. There are two models of AD named infant model and childhood model. The infant model can start after 3 months of infancy. The main features are erythematous and itchy papulovesicles, which appear on the face, but can be spread all over the body. In 40% of cases, the lesions disappear after 1½ years. The childhood model is characterized by dry, lichen-shaped and crusty spots, appearing mainly on the neck and face in the antecubital and popliteal fossae. Around 70% of cases leave after 10 years. Common complications are the appearance of viral or overlapping bacteria (*Herpes simplex, Molluscum contagiosum*) and fungal infections. The diagnosis of AD is facilitated by 'Hanefin and Rajkar' diagnostic criteria[16]. AD in children are prevented by breastfeeding in the exclusive breastfeeding period of a minimum of 6 months has been shown to reduce the cumulative incidence after 2 years compared to cow's milk. Hydration is achieved through the use of topical softeners with low alcohol and water content to reduce the tingling sensation during application and immediate drying[17].

Ingredients of the *Ratha taila*

There are two types of preparations as primary and secondary (*Prathamika* and *Dvitheeka kalpana*) included in *Bhaisajja Kalpana* (Ayurveda Pharmaceutics). *Taila kalpana* (oil preparations) is a secondary preparation used mainly for *Vataja* diseases. There are oil extractions that can also be used for *Pitta* and *Raktha* vitiated diseases as well as *Kaphaja* conditions. In general, *Taila* should be subjected to *Murchana* process to enhance the quality and potency of the oil. Oils are used for both internal (*Antharparimarjana chikitsa*) as well as external applications (*Bahirparimarjana chikitsa*) in Ayurveda and TM in Sri Lanka[18]. In the system of TM, there is a unique oil preparation method called as *Bhanu paaka* which is used to prepare special kinds of oils without using fire. Here, only the heat of the sunlight to get the correct *Paaka avastha* of the relevant oil. The WHO estimates that approximately 80% of the world population in developing countries relies on traditional herbal medicines for health purposes, much of which is related to herbal compounds or their active principles[19].

Main ingredients of *Ratha taila*

1. *Wel keppetiya* (ripe leaves) - *Croton aromaticus* (Euphorbiaceae)
2. *Rathmal* (flower buds) - *Ixora coccinea* (Rubiaceae)
3. *Kapu* (leaves) - *Gossypium herbaceum* (Malvaceae)
4. Juice of fresh coconut leaves - *Cocos nucifera* (Palmaceae)
5. *Thila taila* - Sesame oil

All the ingredients mentioned in the recipe (1 *Patha* [240 ml] from each) are ground with 240 ml of raw coconut leave juice then mixed with 240 ml of sesame oil and placed on a plate to be heated under the sunlight until the correct *Paaka avastha* obtained[3]. The pharmacodynamic properties of the above ingredients are summarized in Table 2. Many chemical constituents are present in the drugs along with their pharmacological actions (per modern and Ayurveda views). The most relevant actions related to skin diseases are included in Table 3.

Table 2: Ayurveda pharmacodynamic properties of the main ingredients[20, 21,22]

Ingredient	*Rasa*	*Guna*	*Veerya*	*Vipaka*	*Prabhava*	*Dosha karma*
Croton aromaticus (WelKeppetiya)	Not found					
Ixora coccinea (Rathmal/ Rathambala)	*Kashaya Tiktha*	*Laghu*	*Sheetha*	*Katu*	Not found	*Kapha* and *Pittahara*
Gossypium herbaceum (Kapu)	*Madhura Kashaya*	*Laghu Snigdha*	*Mandoshna*	*Madhura*	Not found	*Vata shamaka Kapha* and *Pitta vardhaka*
Cocos nucifera (Pol)	*Madhura*	*Guru Snigdha*	*Sheetha*	*Madhura*	*Keshya*	*Vata and Pitta shamaka*

Table 3: Chemical constituents and pharmacological actions of main ingredients according to Ayurveda and modern science

Ingredient	Chemical constituents	Ayurveda pharmacological actions	Modern pharmacological actions
Leave juice of *Croton aromaticus*	alkaloids, terpinoids, steroids and flavonoids[23]	C*harma roga prashamana* (in TM), an ingredient of *Neelyadi* oil[24]	Insecticide and fungicide[25]
Juice of flower buds of *Ixora coccinea*	lupeol, ursolic acid, oleanolic acid, sitosterol, rutin, lecocyanadin, anthocyanins, proanthocyanidins, glycosides of kaempferol and quercetin[26]	In *Hikka nigrahana, Ratha roga prashamana, Shvetha pradara nashaka, Puya mehaghna*[27]	anti-inflammatory, antimicrobial, antioxidant, anti-ulcerogenic, anti-nociceptive, anti-mutagenicity [28]
Leave juice of *Gossypium herbaceum*	carbohydrates, saponins, steroids, glycosides, tannins and flavonoids[29]	*Vedana sthapana, Vrinaropana, Mutrajanaka, Vishamajvaranashaka* and *Yakruth uttejaka*[21]	antiviral, antibacterial,anticancer, antioxidant, anti-trypanosomal[29]
Leave juice of *Cocos nucifera*	phenols, tannins, leucoanthocyanidins, flavonoids, triterpenes, steroids and alkaloids[30]	*Varnya, Keshya, Daha prashamana, Kushtaghna* and *Vruna ropana*[21]	anti-helminthic, anti-inflammatory, antioxidant, antifungal, antimicrobial, antitumor, analgesic [31]

Sesame oil (as the base oil)

Sesame oil pacifies *Vata*, but does not aggravate *Kapha* (rather improves strength), hot in potency (increases stability) and beneficial for the skin in many ways. By the *Ushna veerya*, can pacify both *Vata* and *Kapha doshas*. Due to that, most of the skin disorders having *Vata-Kapha anubandatha* can be easily managed with *Tila taila*[32]. Sesame oil (Gingelly oil) is produced from sesame (*Sesamum indicum*), an annual herb from the Pedaliaceae family that contains the natural antioxidants; sesamolin and sesamin oil. Sesamin is lignin with anti-inflammatory properties and contains vitamin E, which helps to keep skin healthy and supple. It is used in cooking, cosmetics and other health and wellness products. Sesame oil is used by TM in Asia to relieve pain in various tissues such as joints, teeth, and irritated skin[33].

Results

Analyzed Ayurveda pharmacodynamic properties

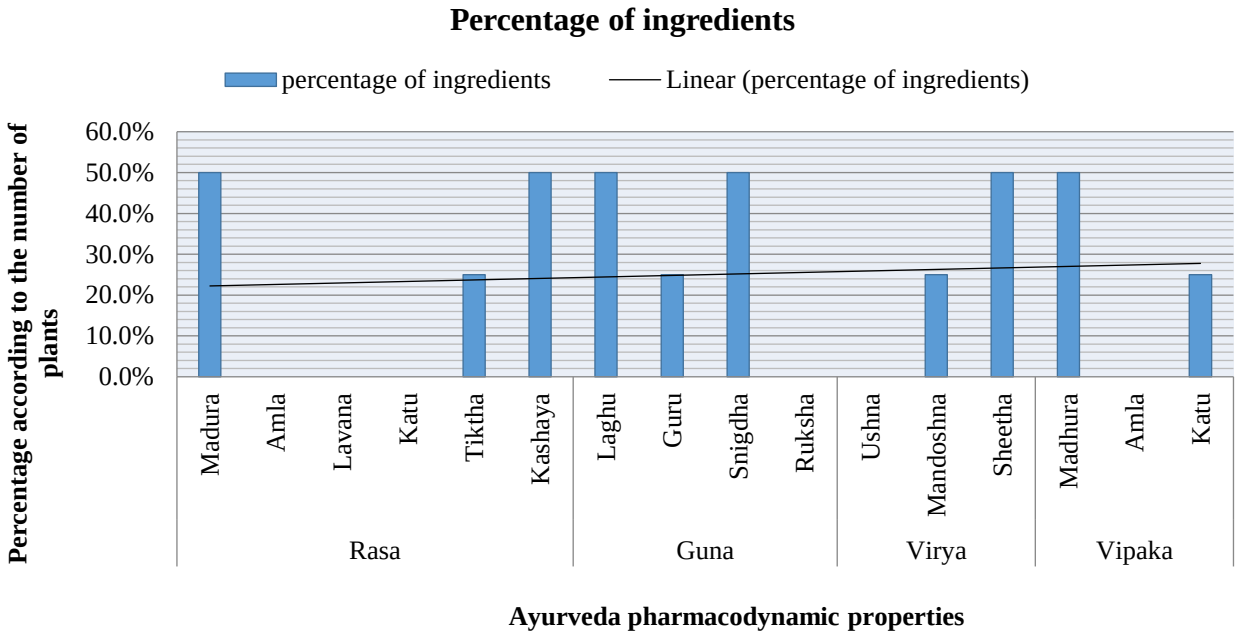

Fig. 2: Summary of the pharmacodynamic properties in the compound drug

Madhura and *Kashaya rasa* are dominantly accompanying the *Tiktha rasa* in this compound drug while *Katu, Amla* and *Lavana rasa* are not present in the ingredients. This compound formula is prominent with *Guru, Laghu* and *Snigdha guna* and devoid of remaining *Gurvadi guna* (attributes). *Sheetha veerya* is predominant and *Ushna veerya* is not present. Also, *Mandoshna veerya* (potency) is also present owing to the ingredients. Madhura and *Katu vipaka* are present, but *Madhura vipaka* is prominent than *Katu* while the *Amla vipaka* is absent (Figure 2).

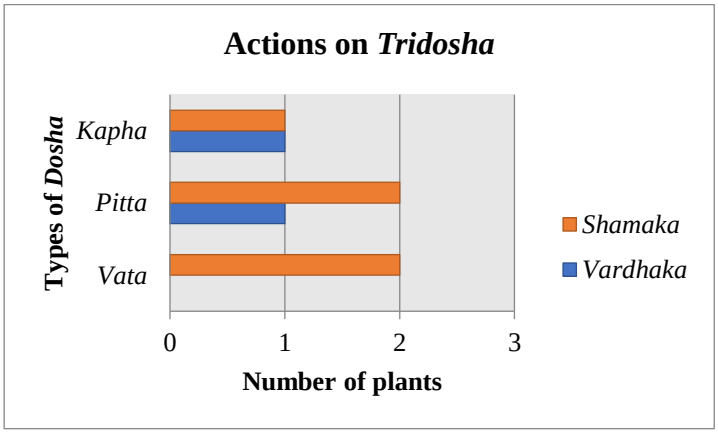

Fig. 3: Distribution of the actions on *Tridosha* in the compound drug

Actions on *Tridosha*

As mentioned in the following Figure 3, these ingredients contain highly *Vata shamaka* and *Pitta shamaka* properties. *Kapha shamaka* and *Vardhaka* properties are equal in quantity but the specific feature of this analyzed data is the absence of *Vata* v*ardhaka* action.

Limitations

Several limitations were found in this review. Out of several recipes mentioned in Ayurveda Pharmacopoeia, *Sarartha Samgrahaya* etc. one in the *Taila khanda* of Volume I in Ayurveda Pharmacopeia had been used. Due to limited information on *Croton aromaticus* the results were solely based upon the rest of the ingredients. Therefore, the results of this review are exposed to prejudices.

Discussion

Upon analysis of the aforementioned quantitative data, the pharmacodynamic properties such as *Madhura* (50.0%) and *Kashaya* (50.0%) r*asa* are predominant along with the *Tiktha* (25.0%) *rasa* in this compound drug. They are opposite to the *Rasa* that aggravate *Pitta dosha. Katu, Amla* and *Lavana rasa* are not present in the ingredients. Therefore, no aggravation of *Pitta* by *Rasa* (tastes). This compound formula is prominent with *Guru* (25.0%), *Laghu* (50.0%) and *Snigdha* (25.0%) *Guna* and devoid of remaining *Guna* (attributes). *Guru guna* reduces the aggravating *Pitta dosha, Laghu* has excessive *Kapha* reducing action and *Snigdha* displays the ability to pacify *Vata dosha. Sheetha veerya* (50.0%) is predominant and *Ushna veerya* is not present. However, due to *Mandoshna veerya* (25.0%), skin diseases caused by *Vata* and *Kapha dosha* can pacify to an optimum level. Also, due to *Sheetha veerya, Pitta* and its related vitiated *Rakthadhathu* will be pacified. *Madhura* and *Katu vipaka* are present, but *Madhura vipaka* (50.0%) is prominent than *Katu* (25.0%). The absence of *Amla vipaka* expresses that there can be no aggravation of *Pitta dosha.*

According to the analyzed Ayurveda pharmacodynamic properties and actions, it can be concluded the final product consists of highly *Pitta shamaka, Daha prashamana, Varnya, Tvachya, Keshya, Kushtaghna, Krmighna, Vrina ropana* and *Raktha shodhaka* actions along with other *Dosha* pacifying actions. Also, the presence of actions such as antioxidant, anti-microbial and anti-inflammatory emphasizes this *Ratha taila* for being more suitable in paediatric *Ratharoga.*

The present review confirms the therapeutic efficacy of *Ratha taila* and its usage against *Rathagaya* or atopic dermatitis occurring in infants and children. These research findings may lead to further development of a novel pharmaceutical product of *Ratha taila* in the future.

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