A Review on Unani Management of *Amraz e Qalb*

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Abstract

One of the body's essential organs is the heart, also referred to as *Qalb*. The Unani system of medicine defines the cardiac diseases under *Amraz e Qalb.* All over the world, cardiovascular diseases (CVDs) account for the foremost cause of mortality. Regardless of developing and non-developing countries CVDs cause a greater burden of disease**.** Unani scholars gave the utmost important to every facet of the treatment of *Amraz e Qalb*. Effective principles of treatment to be followed have been recorded along with effective *Mufrad vo Murakkab Advia* (Single and compound medicines), *Ilaj bil Tadbeer* (Regimenal therapies) and, *Hidayat* (Advice). The study is aimed at compiling those effective regimes paying particular attention to the drugs that have shown potent cardioprotective activity. Authentic Unani text books, and pharmacopoeias were reviewed to get information on *Amraz e Qalb* and its management. A search of scientific journals and research articles was conducted to determine the cardioprotective activity of the commonly given medications. There are sufficient natural medications to adequately treat CVDs. While more scientific research needs to be conducted in the future, this study has provided a significant quantity of information on the management of *Amraz e Qalb* that might be used for the successful treatment of CVDs.

Keywords: *Amraz e Qalb*, Cardiovascular diseases, Cardioprotective activity

Introduction

The heart, also known as *Qalb* is a vital organ of the body. The Unani system of medicine defines the cardiac diseases under *Amraz e Qalb*. The modern medicine describes cardiovascular diseases (CVDs), encompassing coronary heart disease, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism. All over the world, CVDs account for the foremost cause of mortality. 17.9 million of people died of CVDs in the year 2019, hence 32% of global deaths were attributed to CVDs. Heart attacks and strokes were the cause of 85% of these fatalities. Regardless of developing and non-developing countries CVDs cause a greater burden of disease. More than 75% of deaths from CVDs are recorded in the low- and middle-income countries[1]. Assuring that in Sri Lanka, 2.6% of total deaths account for coronary artery diseases, and also being placed as the leading cause of death, while stroke is ranked as the fifth leading cause of death. The second most cause of death and a significant risk factor for the CVDs in Sri Lanka is diabetes mellitus.[2]

It was found that unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol are the commonest behavioral risk factors that lay a path to CVDs by inducing the intermediate risk factors of CVDs such high blood pressure, high blood glucose level and raised blood lipids and overweight and obesity. Hence the modern world suggests, eating a healthy balanced diet with low salt, sugar and fat, regular exercise, cessation of smoking, reducing or abstaining from alcohol use help to prevent the CVDs. Further, the early detection and appropriate treatment would reduce the incidence of deaths due to CVDs.[1,3] In line with this, Unani scholars have described an extensive way of management of

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Amraz e Qalb in the antiquated literatures decades ago, involving the preventive and curative aspect including almost all the treatment modalities of Unani medicine such *Ilaj bil Ghiza* (Dietotherapy), *Ilaj Bil Dawa* (Drug therapy), and *Ilaj bil Tadbeer* (Regimenal therapy). Unveiling those treatment packages would be a greater contribution to overcome the disease burden of CVDs. Avicenna, the greater Unani physician wrote a complete book on the medicines for cardiac diseases called, *Kitab al Advia al Qalbia*. Hence, the study is aimed to gather efficient medications as well as alternative forms of care, paying particular attention to those medications that have been shown to have a cardioprotective impact in order to effectively manage CVDs in the future. Therefore, objectives of this review were to find out effective medicines for the management of *Amraz e Qalb* mentioned in Classical Unani texts and to bring out the effective principles of treatment and treatment packages in the management of *Amraz e Qalb*.

Methodology

Renown classical books of Unani Medicine such as, *Al Qanoon fil Tib*, *Tarjuma e Kabeer*, *Adviya Qalbiya*, *Al Havi Al Kabeer*, *Trajuma e Kamil us Sanah*, *Moalejat e Boqratiya*, and *Qarabadeen* etc. were reviewed to get information on *Amraz e Qalb* and its management. The collected data is scrutinized to get the information on single drugs, compound preparations, Regimenal therapies and advices that could be used for the effective management of heart diseases. Further, most valuable and available drugs were filtered out of huge lists of drugs with great effort. Out of the all cardiac drugs, few, special, known to be effective and commonly used in many prescriptions were selected and analyzed for their cardioprotective effect.

Results and Discussion

Types of Amraz e Qalb

A wide range of cardiac diseases and specific symptoms related to the cardiac diseases have been mentioned by the Unani scholars. List of the cardiac diseases discussed in the classical Unani texts are as below,

Soo e Mizaj Qalb temperament of Heart	- Pathological
Khafqan	- Palpitation
Waja ul Qalb	- Chest pain
Ghashi	- Syncope
Zaghtul Qalb heart	- Black bile filled in
Istisqa ul Qalb	- Congestion of Heart
Zoaf e Qalb	- Weakness of Heart
Qazful Qalb coming out	- Feeling of heart
Jazb ul Qalb	- Descent
Taqashshurul Qalb	- Maceration of Heart
Amraz Samamat e Qalb diseases [4,5,6,7]	- Valvular Heart

Unani medicine, greatly deals with heart disorders. *Soo e Mizaj Qalb* (Heart pathological temperament), *Khafkhan* (Palpitation), and *Waj ul Qalb* (Chest pain) have been extensively discussed. Therefore, the management of these three disorders is the primary emphasis of the study.

Soo e Mizaj Qalb - Pathological temperament of heart

Soo e Mizaj Qalb is primarily due to *Shadeed Haar vo Baarid* (Intense heat or cold). *Quwwat e Haiwani* (Vital power) and *Qalb* are hot in temperament, when the temperament changes towards *Soo e Mizaj Haar* (Intense heat mal temperament), metabolism of heart is increased. Aim of *Usool e Ilaj* (Principles of treatment), is to reverse the normal temperament of heart by giving cold drugs internally and externally. However, cold drugs alone are not advisable, and cold drugs should be accompanied by some hot drugs to preserve internal heat of the *Qalb*. Internally, *Sharbat e Anar* (Syrup of Pomegranate) and *Sharbat e Sandal* (Syrup of Sandal wood) could be given. While externally cold temperamental *Zimad* (Poultice) made of *Kafoor* (Camphor), *Sandal safed* (White sandalwood), *Gulab* (Rose), *Tabasheer* (Bamboo salt), *Kashneez* (Coriander) also to be applied over the cardiac region.[5]

Intense cold atmosphere could affect the heart and cause death at times. When the temperament shifts to *Soo e Mizaj Barid* (Intense cold mal temperament), internally single drugs of hot temperament such as *Darunuj Aqrabi* (Doronicum), *Jadvar* (Zedoary), *Musk* (Musk), *Ambar* (Ambergris), *Zaranbad* (Long zedoary), *Abresham* (Silk coccon), *Sumbul* (Nard) could be given. Further compound preparations like, *Dawa ul Misk, Mufarrih e Har, Sharbat e Gaozaban, Sharbat e badranjboya* and *Sharbat e Ood* could also be prescribed. *Garam vo Khushbudar Zimad* (Hot and dry poultice) made of *Sunbul, Nagarmota, Darcheeni* (Cinnamon), *Gul Surkh, Lavang* (Clove), *Aab e Marzanjosh* (Water of Oregano), *Aab e Badranjboya* (Water of balm mint) and *Aab e Reehan* (Basil water) to be applied on the chest. Patient should be advised to have *Maghziyat* **(**Nuts) and *Garam Ghiza* (Hot diet) like *Gosth* (Young birds' flesh) cooked with spices *Darcheeni, Zafran* (Saffron), *Zeera* (Cumin). Added to that moderate exercise is prescribed. [4,5,6,8,10]

Muqavviate Qalb (Cardiac Tonic) and *Mufarrih Qalb* (Exhilarants) to be given to strengthen the heart and to regulate the functions, while correcting the imbalance of temperament in both conditions. *Muqavviate Qalb vo Mufarrih Qalb Haar and Barid* should be used in *Soo e Mizaj Haar Qalb* and *Soo e Mizaj Barid Qalb* respectively.[4,5,6,10] A list of *Murakkab Dawa* (Compound medicines) of *Muqavviate Qalb* and *Mufarrih Qalb* mentioned in the classical texts are mentioned in Table 1.[4,5,6,7,8,9,10,11,12]

Apart from *Soo e Mizaj Haar* and *Soo e Mizaj Baarid*, temperament could deviate to *Soo e Mizaj Ratab* (Moist mal temperament) and *Soo e Mizaj Yabis* (Dry mal temperament). However, these abnormal temperamental changes need not special medicines as heart will not be affected as abnormal hot or cold temperament. In *Soo e Mizaj Yabis*, large quantities of moist foods to be given, for instance *Ma us Shaeer* (Barley water) with *Roghan e Badam* (Almond oil) is beneficial. Baths are given or the body is sponged after food. Patient feels much better after long sleep which should be encouraged. Patient would be enjoyed having a large quantity of cold water but it should be prohibited if the patient has *Zukam* (Cold). Further, bodily movement and exercise to be restricted. Drugs which produce dryness are useful in *Soo e Mizaj Yabis* like *Lavang, Zafran, Badranjboya* and strong alcohols. Patient should be advised to bath before meal and to do moderate exercise.

Table 1: A list of *Murakkab Dawa* (Compound medicines) of *Muqavviate Qalb* and *Mufarrih Qalb* mentioned in the classical texts

Muqavviate Qalb vo Mufarrih Qalb Haar	***Muqavviate Qalb vo Mufarrih Qalb***
Mufarrih Haar	*Mufarrih Barid*
Dawa ul Mishk	*Khameer e Sandal Sada*
Dawa ul Kurkum	*Khameer e Marwareed*
Khameer e Abresham Sada	*Khameer e Khas*
Khameer e Gaozaban Sada	Sharbat e Anar
Sharbat e Badranjboya	Sharbat e Seyb
Sharbat e Gaozaban	Sharbat e Behi
Sharbat e Ood	Sharbat e Nilufar
Majun Lana	Sharbat e Gul e Gudal
	Sharbat e Vard

Khafkhan - Palpitation

Khafqan / Ikhtilaj is a condition where heart pumps vigorously that the patient feels the contraction which is not normally felt. *Khafkhan* may arise due to several causes. *Khafkhan* due to *Ghair e Tab' aee Akhlat* (Morbid humour) that appears as a result of qualitative and quantitative changes in the humoural matters, should be corrected according to the involved morbid *Akhlat.* In *Imtela e Aweya*, especially, the quantity of *Khoon* is raised where increased congestion of the blood vessels contracts the heart more. In this condition *Fasd* (Venesection) on the Basilic vein is beneficial and *Aqras e Kafoor* (Pills of Camphor) could be prescribed.[5]

Heart gets intoxicated when *Ghair e Taba' ee Sawda* (Offending black humour) reaches it.

Khafkhan appears as a protective mechanism when *Tabee'at* tries to overcome this intoxication. This condition should be corrected by expelling the offending *Sawdavi Madda* using, *Sawdavi* purgatives like *Ayarij e Lughazia* and *Ayarij* e *Rufas*. *Haleel e Siyah* (Chebulic Myrobalan), *Aftimoon* (Dodder), *Hajar e Armani* (Bole Armania) mixed with *Dawaul Misk* and *Sharbat e Reehan* could be prescribed. *Aftimoon* and *Ayarij Feeqra* should be continuously taken with *Sikanjabeen* (A mixture of vinegar and honey). This condition should be treated as *Malikholia* (Melancholia). Drugs to strengthen heart should also be accompanied.[5]

Heart tries to maintain its natural innate heat by increasing its function, when *Ghair Taba'ee Bulghum* (Offending white humour) affects the heart, as a result of this heart beat increases. Offending white humour should be expelled. Expectorants which help in the excretion of slim and sticky matter are more useful. Initially, medicines which reduces the viscosity like *Usara e Turb* and *Sikanjabeen* should be given. Later, A *Nuskha* (Prescription) of purgatives, made of *Ghariqoon* (White ageric), *Shaham e Hanzal* (Colocynth), *Turbud* (Turpeth), *Muqil* (Guggul), *Ood e Hindi*, *Musk*, *Zafran* and *Nafti Namak* could be prescribed. *Khafkhan* due to excessive *Safra* is rare. However, when *Safra* is the offending humour offer *Rubub ul Fawaqia* (Extracts of citrus fruit) and sweet-smelling fruits such as *Safargel* (Behi), *Amrud* (Guava), *Seib* (Apple) after meals.[5]

Qualitative and quantitative changes of the blood in *Faqruddum* (Anaemia) lead to weakness of the heart, palpitation occurs where heart tries to get rid of this weakness. Drugs to strengthen the heart should be prescribed [8]. Further, *Khafkhan* appears due to the use of *Tambako* (tobacco), *Sharab* (alcohol) and *Bhang* (Cannabis). In this case, the substance used should be withdrawn slowly. Then, *Muqawwiyat e Qalb* drugs should be given to strengthen the heart. *Mufarrih e Barid*, with *Sandal safed, Kashneez khushk, Arq Gaozaban, Arq Kewda* by adding *Sharbat Seyb* or *Sharbat Anar* could be prescribed in the morning, while in the Evening *Zulal* (soaked mucilaginous water) of *Gul e Gudal Sabz* (fresh shoe flower) soaked in *Arq Gulab* (Rose water) and *Arq Gaozaban* by adding *Sharbat Nilufar* (Syrup of Lotus) could be given.[5]

Khafkhan due to *Infialat e Nafsaniya* (Psychological effects) could be treated by prescribing *Murakkab Dawa* such, *Khameer Abresham Hakeem Arshad wala, Khameer Abresham Unab wala, Sharbat Seyb* (Apple Syrup) with *Arq Gaozaban* (Distilled water of Borage), *Mufarrih barid* with *Sharbat Anar* (Syrup Pomegranate) If the patient complains of *Qabz* (Constipation), *Gul Qand* (A confection of Rose) could be added.[4,5,8]

Honey with hot water could be given for the occurrence of *Khafkhan* during pregnancy. Following principles of treatment to be adopted to correct *Khafkhan* developed due to pathologies of other adjacent organs like stomach, liver etc. by doing *Fasd* (venesection) on Basilic vein followed by *Munzij vo Mushil Sawda* (Coction & evacuation of atrabilious*), Muqavvi e Qalb*, thin pleasant smelling *Jawarishat* and *Hamam* (Bath) with pleasant smelling drugs.[4,5,8`]

Waja ul Qalb -Chest pain

Waja ul Qalb (Chest pain) is described as a condition that there will be acute chest pain at the site of heart which may lead to death at times. *Ma'ajun Barsha'asha* could be given as *Musakkin e Alam* (Analgesics) to alleviate pain. Additionally, *Mufrad Dawa* (Single drugs) of *Mufatteh e Sudad* (Deobstruants) such *Darchini, Lehzan* (Garlic), *Zaranbad, Adrak* (Ginger), *Shehad* (Honey), *Kaloonji* (Black cumin), and *Zafran* should be included. *Joshanda* made of *Tukhm Kasoos, Tukhm Badranjboya, Shahatra, Badiyan, Gul e Surkh, Aftimoon, Darunaj Aqrabi, Tukhm Qurtum, Maveez Munaqqa* and *Gul e Gaozaban* with *Gulqand* is a good *Mufatteh e Sudad*. It should also include *Muqavvi e Qalb* drugs like *Sharbat Anar, Sharbat Vard Muqarrar, Jawahar Mohra* and *Khameer e Gaozaban*. Encourage the patient to vomit if they often nauseate by utilizing *Muqayyat* (Emetic drugs). *Hazimat* (Digestives) including *Ilaichi, Gulab, Badiyan, Tabasheer, Kashneez* or *Anushdaru*

must be administered. Fatty diets and spices should be avoided. *Shamumat* (Inhalation of fragrant things) *Mishk, Amber* and *Kafoor* could be inhaled. It is forbidden to engage in either mental or physical exercise. It is beneficial to do *Takmeed* (Fomentation) with aloe on the chest area by sprinkling *Haldi* (Turmeric) and *Sohaga* (Borax) over it.[5,8]

Singles drugs that have been frequently mentioned in the prescriptions of classical Unani texts with special attention to their scientific evidence on Cardioprotective action

***Anar – Punica granatum – Pomegranate* (Figure 1)**

Niewiadomska, J. *et al* (2023) assessed the cardioprotective in Zucker diabetic fatty rats using the pomegranate peel extract by evaluating the oxidative stress markers and biomarkers of heart failure. Study revealed that pomegranate peel extract has anti-free radical effects in the myocardium.[13]

A study by Zahra, R. (2017) to assess the cardio protective effect of *Punica granatum* juice in ischemic heart disease with the conventional therapy revealed that the level of serum troponin and Malondialdehyde were markedly reduced and showed a significant decrease in angina pectoris frequency and intensity in patients with unstable angina.[14]

Fig.1: Anar – *Punica granatum*

***Sandal Safed – Santalum album - White sandalwood* (Figure 2)**

Kamal A, et al. (2022) conducted a study employing isoproterenol to induce myocardial infarction in order to assess the cardioprotective impact of Sandal e Safed in murine model. Two groups of mice that received the dose of 600mg/Kg and 800mg/Kg powder of sandal wood orally showed normal cardiac enzymes, lipid profile and histopathological changes without any side effects.[15]

Fig.2: *Sandal Safed – Santalum album*

Pullaiah, C, P. et al. (2017) looked at the cardioprotective effect of *Rosa damascena* Mill. ethanolic extract on changes in cardiac lysosomal enzyme activity and membrane-bound Na/K/ATPase against isoproterenol induced myocardial infarction in rat models. Ethanolic extracts *Rosa damascena* Mill. significantly stopped the changes and returned the serum Creatine kinase-MB, Lactate dehydrogenase, tissue antioxidants, and lysosomal enzyme activity to almost normal levels in rats.[16]

Another study was designed to assess the cardioprotective effect of ethanolic extract of *Rosa damascena* Mill. against isoproterenol induced myocardial infarction in rat. extract of *Rosa damascena* demonstrated myocardial recovery by restoring cardiac marker enzymes, lowering plasma lipid profiles, and increasing HDL, Additionally, level of malondialdehyde decreased while antioxidant levels in the myocardium rose.[17]

Fig.3: *Gul e Surkh* - *Rosa damascena* - Rose

***Zafran* - *Crocus sativus* – *Saffron* (Figure 4)**

Ghorbanzadeh, V. et al. (2017) investigated the cardioprotective role of crocin; a bioactive substance

in the stigma of saffron along with voluntary exercises in diabetic rats. Crocin and exercise promoted cardiac angiogenesis, perhaps by boosting the expression of endothelial cell specific Mir-126 and Mir-210 which are responsible for neoangiogenesis. Hence, it was found that Crocin and voluntary exercises shown to have protective effect against cardiovascular diseases.[18]

Nader, M. et al (2016) conducted a study to assess the cardio protective effect of saffron supplementation against ischemia reperfusion injuries in rat heart models. Supplementing with saffron decreased myocardial damage and improved cardiac function as the biochemical markers showed reduction in lipid peroxidation and infarct size along with increased antioxidant activity. Further, Electrographic findings showed a significant decrease in both premature ventricular contraction and ventricular tachycardia/ fibrillation in comparison with ischemia reperfusion hearts.[19]

Fig. 4: *Zafran - Crocus sativus*

***Darcheeni - Cinnamomom zeylanicum – Cinnamon* (Figure 5)**

Elmongy, N. et al (2022) investigated for the cardioprotective effect of aqueous extract of cinnamon bark in high fat and high fructose diet fat rats. The current study showed that, combination therapy with pioglitazone and cinnamon extract significantly ameliorated the cardiomyopathy caused by the high fat and high fructose diet possibly by the antioxidant, anti-inflammatory and hypolipidemic mechanisms in the experimental rats.[20]

Jayasinghe, A.N. S. et al. (2021) carried out a in vivo study to assess the cardio protective efficacy of *Cinnamomum zeylanicum* bark extract against doxorubicin induced cardiotoxicity. Total antioxidant capacity, reduced glutathione peroxidase, glutathione reductase, superoxide dismutase, and catalase activity were significantly lower than the doxorubicin control group. Hence, it was revealed that, *Cinnamomum zeylanicum* bark extract showed a significant cardioprotective activity through its anti-oxidant and anti-inflammatory potency.[21]

Fig. 5: *Darcheeni - Cinnamomom zeylanicum*

***Zaranbad – Curcuma zedoaria – White Zedoary* (Figure 6)**

A recent study by Amrullah, A. (2021) was carried out on ethanolic extract of *Curcuma zedoaria* to assess the cardio protective activity against cyclophosphamide induced cardiovascular complications in rats. Catechin was used as a positive control. Creatine kinase MB and serum troponin level were come down along with the return of normal histopathology after treatment with increasing dose of ethanolic extract of *Curcuma zedaoria* matching the results of catechin treated group, proved the cardioprotective efficacy of *Curcuma zedoaria*.[22]

Fig. 6: *Zaranbad – Curcuma zedoaria*

***Abresham – Bombyx mori – Silk Cocoon* (Figure 7)**

Srivastav, R. (2022) investigated the cardioprotective potency of *Bombyx mori* against isoprenaline induced myocardial infarction in rats. Pre-treatment with the ethanolic extract of *Bombyx mori* (EEB) in the myocardial infarction induced

rats, especially the high dose of EEB, showed restoration of cardiac histopathology and biochemical markers such alanine transaminase, aspartate transaminase, creatine kinase lactate dehydrogenase and troponin-I.[23]

Fig. 7: *Abresham – Bombix mori*

***Badranjboya - Melissa officinalis – Balm Mint* (Figure 8)**

Nevena, D. et al. (2022) evaluated the cardioprotective activity of ethanolic extract of *Melissa officinalis* (EEMO) via an in vivo study against experimental autoimmune myocarditis rat models. Echocardiographic findings of Ejection fraction, inflammatory markers were significantly improved after the supplementation with EEMO. Specifically, the experimental group that received 200mg/kg of EEMO showed a significant increase in anti-oxidant activity, cardiac performance and myocardial architecture. Hence, it was concluded that Melissa officinalis is a good supportive therapy for autoimmune myocarditis.[24]

Sedighi, M. et al. (2019) investigated the efficacy of ethanolic leaf extract of *Melissa officinalis* as a cardioprotective drugs on ischemia reperfusion injuries in experimental rats. Extract of Melissa officinalis treated group showed a reduction in the size of infarct and episode of arrhythmia compared with that of control group. The mechanism of cardioprotective action is said to be due to the anti-oxidant capacity of the *Melissa officinalis* extract.[25]

Fig. 8: *Badranjboya - Melissa officinalis*

***Gaozaban - Onosma bracteatum – Borage* (Figure 9)**

Strengthening effect of Arq e gaozaban (Distilled water of *Onosma bracteatum*) in heart was investigated through the parameters of cardiac muscle contraction and heart rate in experimental frog heart. Cardiac contraction force increased significantly after employing *arq e gaozaban* with the involvement of calcium channels proving its significant positive inotropic action. It was concluded that due to the myocardial strengthening effect, *Arq e Gaozaban* could be administered in various ailments of the heart.[26]

Fig. 9: *Gaozaban - Onosma Bracteatum*

***Gul e Gudhal - Hibiscus rosa sinensis – Hibiscus* (Figure 10)**

An in vivo study to assess the cardioprotective activity of *Hibiscus rosa sinensis* against ischemic reperfusion injury in murine models by Gauthaman, K.K. et al. (2006) revealed that all treatment groups with oral pulverized flower of Hibiscus rosa sinensis were shown significant increase in antioxidant markers, while the 200mg/Kg treated rat group showed a significant reduction in thiobarbituric acid reactive substances/TBARs (lipid peroxidation marker) and recovering histopathological structure of the heart.[27]

Fig. 10: *Gul e Gudhal - Hibiscus rosa sinensis*

***Angoor - Vitis vinifera- Grapes* (Figure 11)**

Sergazy, S. et al (2020) conducted a study to assess the cardioprotective effect of grape phenol extract against doxorubicin induced cardiotoxicity in rat models. Administration of grape phenol extract showed an increase in antioxidant activity through increased level of superoxide dismutase, catalase, and glutathione peroxidase. Reversal of microscopic myocardial damages to normal was also noted. Hence, it was concluded that grape phenol extract is a good source for the management of heart diseases.[28]

Another study by Razmaraii, N. et. (2016) in doxorubicin induced cardiotoxicity to determine the protective effect of grape seed extract in the heart of experimental rat models revealed improvement in the echocardiographic parameters such ejection fraction and fraction shortening and ECG findings and Myocardial structures were also returned to normal after treatment with GSE, through the anti-inflammatory and anti-oxidant properties.[29]

Fig. 11: *Angoor - Vitis vinifera*

***Seib - Malus domestica – Apple* (Figure 12)**

Rukshana, N. (2022) assessed cardioprotective efficacy of ethanolic extract of *Malus domestica* in experimental rat models. Increasing levels of glutathione peroxidase and superoxide dismutase enzymes at high doses of extract of *Malus domestica* showed a significant antioxidant activity, while the total antioxidant capacity was not substantial compared with vitamin c. Extract of *Malus domestica* against Arachnoid acid and platelet activating factor platelet induced platelet aggregation, showed a noteworthy anti platelet activity. Hence, it was suggested that antioxidant potency, antiplatelet and calcium channel activities of ethanolic extract of *Malus domestica* were the key paths to exert its cardioprotective mechanism.[30]

A comparative study on the cardioprotective effect of phenols of apple peel and apple flesh against high fat and high fructose diet fed mice discovered that both peel and flesh of the apple has significant cardioprotective efficacy. However, peel of apple demonstrated a potent cardioprotective activity as it possesses considerably high amount of total phenols and total flavonoids than flesh of apple.[31]

Fig. 12: *Seib - Malus domestica*

Conclusion

Though there is a sophisticated medical system, a hike in the prevalence of CVDs along with increased disease burden is a huge problem nowadays. Hence, this study would be a valuable source to overcome CVDs and their complication as it reveals the knowledge on the Unani management of Amraz e Qalb that could be effectively employed to manage cardiac diseases. Unani philosophers have not only prescribed medicines, rather they have given a complete treatment compendium. Further, most of the drugs that have been administered in Amraz e Qalb are proven for their cardioprotective action. Hence, this study has provided a significant quantity of information on the management of Amraz e Qalb that might be used for the successful treatment of CVDs in the future.

Conflict of interest

The authors have no conflict of interest to declare.

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