

MANAGEMENT OF AMALPITTA WITH SHATAVARI, AMALAKI AND YASHTIMADHU -
A REVIEWMonica Salaria*¹ and Aditya²¹Assistant Professor, Dept. of *Kriya Sharir*, Jammu Institute of Ayurveda & Research, Jammu.²MD *Kayachikitsa*, Medical Officer, Govt. Ayurvedic Dispensary, Surinsar, Jammu, India.

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*Corresponding Author

Monica Salaria

Assistant Professor, Dept. of
Kriya Sharir, Jammu Institute
of Ayurveda & Research,
Jammu.

ABSTRACT

The *Amalpitta* is one among the several GIT upsets. It is the root cause of many other ailments, as *shukratva* is told to be the reason of indigestion, *grahani*, *atisar* etc. Today's human is following almost all *nidanans* of the *Amalpitta* like improper food intake, untimely food intake, junk foods, *divaswapan*, *ratrijagran* etc. This all leads to disturbance in digestion and improperly digested matter becomes *shukta* or *amal*. Most of the patients visiting the health centres complain of hyperacidity, GORD and resultant conditions such as peptic ulcers. The increased use on NSAIDS is a strong cause besides the dietary habits and nature of diet. Thus, restriction or decrease in use of such drugs and diet, change in dietary habits and intake of *Ayurvedic* treatment can be the game changer. Some yogic procedures as *Dhouti* can also be very useful. The line of treatment explained in *Ayurveda* is *vamana*, *virechana* procedures which take some time for completion and bed rest also. This is difficult for present society to do such procedures so the frequently useful drugs should be studied for the purpose. *Shatavari*, *Amalaki* and *Yashtimadhu* are among the drugs that will be evaluated on the basis of Pharmacological properties and already done research studies.

KEYWORDS: *Amalpitta*, *Shatavari*, *Amalaki*, *Yashtimadhu*, Acidity.

INTRODUCTION

The *Amlaka*, a similar term of *Amalpitta* can be found as *pitta nanatmaja vikara*.^[1] The *nidana* specially *Paitika* in nature may lead to excessive *amlodgara*, *hrit kanth daha*, *avipaka* etc.^[2] The present-day society is frequently indulging in the diet that leads to hyperacidity. There is no concept left for dietary habits in the present society. The relation of food and water intake in relation to food timing is not followed. For little pain, analgesics are consumed that increase acidity. *Adhyasana*, *Atimatra ashana* are frequently followed. No one leaves the untimely snacks along with tea several times in a day. In the older golden times, people used to walk hundred steps after food intake followed by lying on left flank then right flank and lastly straight. Now a days, people take food and fall asleep in night as well as day time also. There is craving for *Vishaya* inspite of having control over the senses. All that lead to *nidana* consumption that lead to *Amalpitta*. Among many useful *Ayurvedic* drugs, *Shatavari*, *Amalaki*, *Yashtimadhu* are also used in this condition as they have typical *pittahar gunas* and *karmas* so here they are studied for their pharmacological properties, active principles and the already done research work.

AIMS AND OBJECTIVES

To study Literary aspects of *Amalpitta* and access the effectiveness of the drug *Shatavari*, *Amalaki* and *Yashtimadhu* in its management. To bring out research works in support of the classical qualities of drugs.

Disease Description

The disease has been explained well by later authors. The disease is a gateway for several other disorders. It is broadly classified as *Urdhva* and *Adh Amalpitta*.^[3] *Amlapitta* as a separate disease, but he has given many scattered references regarding *Amlapitta*, which are as follows. While explaining the indications of *Ashtavidha Ksheera & Kamsa Haritaki*, *Amlapitta* has also been listed.^[4] and *Kulattha* (*Dolichos biflorus* Linn.) has been considered as chief etiological factor of *Amlapitta* in *Agrya Prakarana*.^[5] In *Susrutha Samhita* while describing the diseases caused by excessive use of *Lavana*; mentioned a disease called "Amlika" which is similar to *Amlapitta*.^[6] There is also some description in *Kashyap Samhita* as described in below text.

NIDANA

Viruddha, *Adhyashana*, *Ajeerana*, *Ama*, *Pishtaanna*, *Apakva*, *Madhya*, *Apakva Ksheera*, *Guru Bhojana*, *Abhishyandi Bhojana*, *Vega Dharana*, *Atyushna Atisevanaat*, *Snigdha Atisevanaat*, *Ruksha Atisevanaat*,

Amla Atisevanaat, Drava atisevanaat, Phaanita, Kullatha, Brishtadhanya, Repeated day sleeping after eating, Taking bath after intake of food, Ati Svedana, Paryushita Ahara Sevana.^[7]

Viruddha, dushta, amla, vidahi, pittaprakopak annapana, vidagdha bhojan.^[8]

Kulattha is amalpittajanak sresh.^[9]

Chinta Shoka Bhaya Krodha Moha are manasika hetus responsible for improper pachana.^[10]

Abhojan, ajirna, atibhojan, vishmashan, asatmya-guru-sheeta-atiruksha-sandushta-bhojan, vireka-vamana-sneha vibhrama, desh-kal-ritu vaishamyata, vegavidharan.^[11]

SAMPRAPTI

The *nidana sevana* leads to the viciation of *Agni* resulting in difficulty in digestion of even light foods. This indigested food then turns *amal*. Then it becomes *Sukta* and it lies in the stomach stagnant. Any food which is taken becomes *Vidagdha*. Further leading to *amal udgaar* etc. and termed as *Amalpitta*.^[12]

Due to *Nidana sevana*, *Vatadi Doshas* gets aggravated and causes *Mandaagni* thereby causes mildness of the *Agni* and the food remains in the *Amashaya* and turns to *Shukta Avastha* due to improper burning. Due to excessive intake of food due to his greed the *Pitta* gets vitiated in *Drava Roopa* and this disease is called as *Amlapitta*. This can be understood with a simile just as milk is poured into curd pot immediately attains sourness and gets into an inspissated form. In the same way, repeatedly eaten food gets improperly burnt and causes acidity of *Ahara Rasa*.^[13]

RUPA

Avipaka, klama, utklesha, tikta-amal udgara, hrit-kanth daha, aruchi.^[14]

Atisara, Gurukoshtatha, Amlotklesha, Shiroruja, Hritshula, Udaraadhmana, Angasada, Antrakujanam, Kanta urasi, Vidahyadi, Roma Harsha.^[15]

Urdhwa amalpitta- Harit-pita-neela-krishan-atipichila-atiamal vamana, amal udgara, kanth-hrit-kukshi daha, shiroruja, kar-pada daha, aruchi, jwara, kandu

Adho amalpitta- Trishna, daha, murcha, bhram, moha, hrillasa, kotha, romharsh, sweda, anga pitata.^[16]

CHIKITSA OF AMLAPITTA

Acharya Kashyapa says as the disease is developed from *Amashaya* (Stomach) where the *Kapha* and *Pitta* is having *Ashraya* so the wise physician should give *Vamana* (Therapeutic emetics) from the very beginning to the one who have not lost his strength and bulk. *Vamana* is considered as the best modality of treatment

in *Amlapitta*. It is just like destroying the tree by cutting its roots. After the *Vamana Karma* the residual *Doshas* should be pacified by *Langhana* and *Laghu Bhojana* and by using the *Shamana* and *Pachana Aushadis*. When the *Doshas* are in excited form and moving upwards no other *Drava Aushadi* except emetics should be given because it will not undergo digestion due to *Agnimandhya*.^[17] After following the *Pathya* and *Viharas* told for *Amlapitta*, *Drava Aushada* can be given and it will cause the pacification, digestion and expulsion of *Doshas*.^[18]

The line of treatment here is *Vamana* in *Urdhwa amalpitta* and *Virechan* in *adho amalpitta*. *Vamana* is indicated with *Patolapatra, nimbapatra kwatha* along with *madanaphal, pippalichurana, saindhav*. *Virechan* is indicated with *amalaka kwatha + trivrit churana + madhu*.^[11] *Anuvasana* and *Asthapana Vasti* are indicated in chronic cases.^[19]

Drug Description

Shatavari (Root)

Shatavari consists of tuberous roots of *Asparagus racemosus* Willd. (Fam. Liliaceae), an ascending, spinous much branched, perennial climber found throughout the country.^[20]

Gana^[21]

Charaka: Balya, Vayasthapana, Madhuraskandha
Sushruta: Vidarigandhadi, Kantakpanchmool, Pittaprashaman

Properties and Action

Rasa: Madhura, Tikta, Guna: Guru, Snigdha, Virya: Sheeta, Vipaka: Madhura
Karma: Shukrala, Balya, Hridya, Medhya, Pittahara, Rasayana, Vrishya, Kaphavataghna, Vataharaa, Stanyakara, Netrya, Agnipushtikara.^[22]

Samprapti Vighatan

The *Madhura, Tikta rasa; Madhura vipaka; Sheeta virya* are *Pittahar*. Thus, the *Pittashaman* can be done by the drug leading to *Samprapti vighatan*. The *Agnipushtikara karma* may also be helpful in maintainance of *Jathragni*

Active Principles

CONSTITUENTS - Sugar, Glycosides, Saponin and Sitosterol.^[23]

Pharmacological & Biological Activities

Comparative study of the antiulcer and antisecretory activity of *Asparagus racemosus* Willd (*Shatawari*) and *Withania somnifera* Dunal (*Ashwagandha*) root extract with a standard drug, ranitidine, in various models of gastric ulcer in rats is presented. Ulcer was induced by the indomethacin (NSAID) and swim (restraint) stress treatment. Results demonstrated that *A. racemosus* as well as *W. somnifera* methanolic extract (100 mg/kg BW/day p.o.) given orally for 15 days significantly reduced the ulcer index, volume of gastric secretion, free acidity, and total acidity. A significant increase in the

total carbohydrate and total carbohydrate/protein ratio was also observed. Study also indicated an increase in antioxidant defense, that is, enzymes superoxide dismutase, catalase, and ascorbic acid, increased significantly, whereas a significant decrease in lipid peroxidation was observed. *A. racemosus* was more effective in reducing gastric ulcer in indomethacin-treated gastric ulcerative rats, whereas *W. somnifera* was effective in stress-induced gastric ulcer. Results obtained for both herbal drugs were comparable to those of the standard drug ranitidine.^[24]

AMALAKI (Fresh Fruit)

Amalaki consists of fresh fruit pulp of *Embolia officinalis* Gaertn. (Fam. Euphorbiaceae); a small or medium sized tree, found in mixed deciduous forests, ascending to 1300 m on hills and cultivated in gardens and home yards.^[25]

Gana^[26]

Charaka: Vayasthapana, Virechanopag
Sushruta: Triphala, Parushakadi

Properties and Action

Rasa: Madhura, Amla, Katu, Tikta, Kashaya, *Guna*: Laghu, Ruksha, *Virya*: Sheeta, *Vipaka*: Madhura, *Karma*: Tridoshajit, Vrishya, Rasayana, Cakshushya.^[27]

Samprapti Vighatan

Amalaki has *madhura* dominant *amla*, *katu*, *tikta*, *kashaya* *rasa* and *madhura* *vipaka*, *sheeta* *virya*, these qualities are *pittashamaka* dominantly. But *amalaki* is also said to have *tridosahar* property. As it is *pitta* predominant *tridoshaj* *vyadhi* so *tridosahara* drug is the best.

Active Principles

CONSTITUENTS - Ascorbic acid and tannins.^[28]

Pharmacological & Biological Activities

Gastroprotective effect

We designed a double-arm, randomized, double-blind, placebo-controlled clinical trial. Sixty-eight patients who had classic symptoms of GERD (heartburn, regurgitation and epigastralgia) for at least three months before the start of the trial were randomized in two parallel groups. Patients in the Amla group received two 500 mg Amla tablets twice a day, after meals, for 4 weeks. In the control group, patients received placebo tablets similar to the Amla prescription. The patients were visited at baseline, and at the end of the 2nd and 4th weeks of intervention; their symptoms were measured on a frequency and severity scale for the symptoms of NERD, according to the quality of life in reflux-associated disease questionnaire. The result was that frequencies of heartburn and regurgitation in both groups of the study were significantly reduced after intervention ($P < 0.001$). Repeated measures logistic regression analysis showed that, in the Amla group, there was a more significant reduction in regurgitation frequency, heartburn

frequency, regurgitation severity and heartburn severity during the study period, compared with the placebo group ($P < 0.001$). Thus, randomized double-blind, placebo-controlled clinical trial demonstrated that Amla could reduce frequencies of heartburn and regurgitation and improve heartburn and regurgitation severity in patients.^[29]

Effect on gastric secretion and acidity

An ethanol extract of 'Amla' *Embolia officinalis* Gaertn. was examined for its antisecretory and antiulcer activities employing different experimental models in rats, including pylorus ligation Shay rats, indomethacin, hypothermic restraint stress-induced gastric ulcer and necrotizing agents (80% ethanol, 0.2 M NaOH and 25% NaCl). Oral administration of Amla extract at doses 250 mg/kg and 500 mg/kg significantly inhibited the development of gastric lesions in all test models used. It also caused significant decrease of the pyloric-ligation induced basal gastric secretion, titratable acidity and gastric mucosal injury. Besides, Amla extract offered protection against ethanol-induced depletion of stomach wall mucus and reduction in nonprotein sulfhydryl concentration. Histopathological analyses are in good agreement with pharmacological and biochemical findings. The results indicate that Amla extract possesses antisecretory, antiulcer, and cytoprotective properties.^[30]

Madhu-Yashti

Yashti consists of dried, unpeeled, stolon and root of *Glycyrrhiza glabra* Linn, (Fam. Leguminosae), a tall perennial herb, upto 2 m high found cultivated in Europe, Persia, Afghanistan and to little extent in some parts of India.^[31]

Gana^[32]

Charaka: Kanthya, Jivaniya, Sandhaniya, Varnya, Kandughna, Mutravirechaniya, Shonitasthapana, Chardinigrahana, Snehopag, Vamanopag, Asthanopag
Sushruta: Kakolyadi, Sarivadi, Anjanadi

Properties And Action

Rasa: Madhura, *Guna*: Guru, Snigdha, *Virya* : Sheeta, *Vipaka* : Madhura
Karma: Balya, Cakshushya, Vrishya, Varnya, Vatapittajit, Raktaprasadana.^[33]

Samprapti Vighatan

Madhur ras, *madhur vipaka*, *sheeta* *Virya* can work on the viciated *Pitta* and do its *shamana*.

Active Principles

Constituents - Glycyrrhizin, glycyrrhizic acid, glycyrrhetic acid, asparagine, sugars, resin and starch.^[34]

Pharmacological & Biological Activities

Glycyrrhiza glabra L. is used in folk medicine for treatment of stomach disorders including peptic ulcers.

The hydroalcoholic extract of *Glycyrrhiza glabra* L. (HEGG) was evaluated for antiulcerogenic activity and acute toxicity profile in mice. Various doses of HEGG (50-200 mg/kg) were administered orally to animals of different groups. Omeprazole and cimetidine at doses of 30 and 100 mg/kg were used as positive controls, respectively. Stomach was opened along the greater curvature then ulceration index was determined examining the inner lining of stomach. Oral administration of the extract at 1600 mg/kg did not produce toxic symptoms and mortality in mice. 2950 mg/kg was determined as the oral LD50. The HEGG (50–200 mg/kg) showed a significant reduction in ulcer index in HCl/Ethanol-induced ulcer. *G. glabra* extract (50-150 mg/kg) showed antiulcer activity against indomethacin-induced gastric lesions dose dependently. The extract effectively inhibited formation of gastric lesions induced by ethanol. The extract (200 mg/kg) was more potent than omeprazole (30 mg/kg). HEGG reduced the ulcer index in hypothermic stress induced gastric ulcers in mice and the antiulcer effect was comparable to that of cimetidine. The results indicated that *G. glabra* hydroalcoholic extract exerted an antiulcerogenic effect that could be associated with increase in gastric mucosal defensive factors.^[35]

Among the chemical constituents of licorice, glabridin and glabrene, licochalcone A, licoricidin and licoisoflavone B exhibited inhibitory activity against the growth of *Helicobacter pylori* in-vitro. These flavonoids also showed anti- *H. pylori* activity against a clarithromycin (CLAR) and amoxicillin (AMOX)- resistant strains. Glycyrrhetic acid was as the most potent compound.^[36]

CONCLUSION

In *Ayurvedic* treatments, the *Amalpitta* can be treated with several drugs, among which *Shatavari*, *Amalaki* and *Yashtimadhu* are useful drugs. Many research studies of the present-day support this. The hyperacidity ailment is very prevalent in the society even in early age groups because of improper food habits so an attempt was made to do the pharmacological study on effect of *Shatavari*, *Amalaki* and *Yashtimadhu* on *Amalpitta* which showed a good result principally. Further, clinical studies are required for complete evaluation.

REFERENCES

1. Charaka Samhita Sutrasthana 20th chapter 14th shloka - Vidyotini Hindi commentary by Kashinath Shastri and Gorakhnath Chaturvedi, edited by Rajeshwardutt Shastri, Pandit Yadunandan Upadhyaya, Pandit Gangasahaya Pandeya, Dr. Banarasidas Gupta; Reprint year, Chaukhambha Bharati Academy, Varanasi, India, 2008; 402.
2. Madhava nidana 51st Chapter 2nd Shloka-Madhukosha Vyakhya by Vijayrakshita and Srikanth Dutta, Vidyotini Hindi commentary by Sh. Sudarshan Shastri, revised and edited by Prof. Yadunandan Upadhyaya; Reprint Year, Chaukhambha Sanskrit Bhawan, Varanasi, India, 2002; 171.
3. Madhava nidana 51st Chapter 3-6th Shloka-Madhukosha Vyakhya by Vijayrakshita and Srikanth Dutta, Vidyotini Hindi commentary by Sh. Sudarshan Shastri, revised and edited by Prof. Yadunandan Upadhyaya; Reprint Year, Chaukhambha Sanskrit Bhawan, Varanasi, India, 2002; 171.
4. Vaidya Jadavaji Trikamji Acarya, Caraka Samhita - Ayurveda Dipika Commentary of Cakrapanidatta. Edited Chaukhamba Sanskrit Sansthana Varanasi; Fifth Edition, 2001; 22: 487.
5. Vaidya Jadavaji Trikamji Acarya, Caraka Samhita - Ayurveda Dipika Commentary of Cakrapanidatta. Edited; Chaukhamba Sanskrit Sansthana Varanasi; Fifth Edition, 2001; 131.
6. Jadavaji Trikamji Acarya Susruta Samhita Nibandhasangraha Commentary of Shri Dalhanacarya, Edited; Chaukhamba Orientalia Varanasi, Seventh Edition, 2002; 175.
7. Pandit Hemraja Sharma, editor. Kashyapa Samhita with Vidyotini Hindi commentary. Khil Sthana Chapter 16. Verse 3-6. 3rd ed. Varanasi: Chaukhamba Sanskrit Series Office, 2008; 335.
8. Madhava nidana 51st Chapter 3-6th Shloka-Madhukosha Vyakhya by Vijayrakshita and Srikanth Dutta, Vidyotini Hindi commentary by Sh. Sudarshan Shastri, revised and edited by Prof. Yadunandan Upadhyaya; Reprint Year, Chaukhambha Sanskrit Bhawan, Varanasi, India, 2002; 171.
9. Charaka Samhita Sutrasthana 25th chapter 40th shloka - Vidyotini Hindi commentary by Kashinath Shastri and Gorakhnath Chaturvedi, edited by Rajeshwardutt Shastri, Pandit Yadunandan Upadhyaya, Pandit Gangasahaya Pandeya, Dr. Banarasidas Gupta; Reprint year, Chaukhambha Bharati Academy, Varanasi, India, 2008; 468.
10. Charaka Samhita Vimanasthana 2nd chapter 9th shloka - Vidyotini Hindi commentary by Kashinath Shastri and Gorakhnath Chaturvedi, edited by Rajeshwardutt Shastri, Pandit Yadunandan Upadhyaya, Pandit Gangasahaya Pandeya, Dr. Banarasidas Gupta; Reprint year, Chaukhambha Bharati Academy, Varanasi, India, 2008; 688.
11. Charaka Samhita Chikitsasthana 15th Chapter 42-44th shloka - Vidyotini Hindi commentary by Kashinath Shastri and Gorakhnath Chaturvedi, edited by Rajeshwardutt Shastri, Pandit Yadunandan Upadhyaya, Pandit Gangasahaya Pandeya, Dr. Banarasidas Gupta; Reprint year, Chaukhambha Bharati Academy, Varanasi, India, 2011; 460.
12. Charaka Samhita Chikitsasthana 15th Chapter 44th shloka - Vidyotini Hindi commentary by Kashinath Shastri and Gorakhnath Chaturvedi, edited by Rajeshwardutt Shastri, Pandit Yadunandan Upadhyaya, Pandit Gangasahaya Pandeya, Dr. Banarasidas Gupta; Reprint year, Chaukhambha Bharati Academy, Varanasi, India, 2011; 460.

13. Pandit Hemraja Sharma, editor. Kashyapa Samhita with Vidhyotini Hindi commentary Khil Sthana Chapter 16. Verse 7-13. 3rd ed. Varanasi: Chaukhamba Sanskrit Series Office, 2008; 335.
14. Madhava nidana 51st Chapter 2nd Shloka-Madhukosha Vyakhya by Vijayrakshita and Srikanth Dutta, Vidyotini Hindi commentary by Sh. Sudarshan Shastri, revised and edited by Prof. Yadunandan Upadhyaya; Reprint Year, Chaukhambha Sanskrit Bhawan, Varanasi, India, 2002; 171.
15. Pandit Hemraja Sharma, editor. Kashyapa Samhita with Vidhyotini Hindi commentary. Khil Sthana Chapter 16. Verse 14-17. 3rd ed. Varanasi: Chaukhamba Sanskrit Series Office, 2008; 335.
16. Madhava nidana 51st Chapter 3-6th Shloka-Madhukosha Vyakhya by Vijayrakshita and Srikanth Dutta, Vidyotini Hindi commentary by Sh. Sudarshan Shastri, revised and edited by Prof. Yadunandan Upadhyaya; Reprint Year, Chaukhambha Sanskrit Bhawan, Varanasi, India, 2002; 171.
17. Pandit Hemraja Sharma, editor. Kashyapa Samhita with Vidhyotini Hindi commentary. Khil Sthana Chapter 16. Verse 22-23. 3rd ed. Varanasi: Chaukhamba Sanskrit Series Office, 2008; 335.
18. Pandit Hemraja Sharma, editor. Kashyapa Samhita with Vidhyotini Hindi commentary. Khil Sthana Chapter 16. Verse 24-30. 3rd ed. Varanasi: Chaukhamba Sanskrit Series Office, 2008; 335.
19. Bhaishajya Ratnavali 56th chapter 3-4 shloka siddhiprada hindi commentary by Professor Siddhinandan Mishra; Reprint year, Chaukhamba surbharti prakashan Varanasi, India, 2009; 901.
20. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 4, government of india ministry of health and family welfare; department of AYUSH, 122.
21. Dravya guna Vigyana by Prof. P.V Sharma, Volume 2nd 234th drug chapter, Reprint; Chaukhamba Bharti Academy, 2001; 562.
22. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 4, government of india ministry of health and family welfare; department of AYUSH, 123.
23. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 4, government of india ministry of health and family welfare; department of AYUSH, 123.
24. Bhatnagar M, Sisodia SS, Bhatnagar R. Antiulcer and antioxidant activity of *Asparagus racemosus* Willd and *Withania somnifera* Dunal in rats. *Ann N Y Acad Sci*, 2005; 1056: 261-278. doi:10.1196/annals.1352.027.
25. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 1, government of india ministry of health and family welfare; department of AYUSH, 5.
26. Dravya guna Vigyana by Prof. P.V Sharma, Volume 2nd 241st drug chapter, Reprint, Chaukhamba Bharti Academy, 2001; 758.
27. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 1, government of india ministry of health and family welfare; department of AYUSH, 6.
28. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 1, government of india ministry of health and family welfare; department of AYUSH, 6.
29. Karkon Varnosfaderani S, Hashem-Dabaghian F, Amin G, et al. Efficacy and safety of Amla (*Phyllanthus emblica* L.) in non-erosive reflux disease: a double-blind, randomized, placebo-controlled clinical trial. *J Integr Med*, 2018; 16(2): 126-131. doi:10.1016/j.joim.2018.02.008, 126-131.
30. Al-Rehaily AJ, Al-Howiriny TA, Al-Sohaibani MO, Rafatullah S. Gastroprotective effects of 'Amla' *Emblica officinalis* on in vivo test models in rats. *Phytomedicine*. 2002; 9(6): 515-522. doi:10.1078/09447110260573146, p.no.515-522.
31. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 1, government of india ministry of health and family welfare; department of AYUSH, 168.
32. Dravya guna Vigyana by Prof. P.V Sharma, Volume 2nd 98st drug chapter, Reprint 2001 Chaukhamba Bharti Academy, 253.
33. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 1, government of india ministry of health and family welfare; department of AYUSH, 169.
34. The Ayurvedic pharmacopoeia of India e-book, part-1, volume – 1, government of india ministry of health and family welfare; department of AYUSH, 169.
35. Jalilzadeh-Amin G, Najarnezhad V, Anassori E, Mostafavi M, Keshipour H. Antiulcer properties of *Glycyrrhiza glabra* L. extract on experimental models of gastric ulcer in mice. *Iran J Pharm Res.*, 2015; 14(4): 1163-1170.
36. Fukai T, Marumo A, Kaitou K, Kanda T, Terada S, Nomura T Anti *Helicobacter pylori* flavonoids from licorice extract. *Life Sci.*, 2002; 71(12): 1449–1463.