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GASTRO-INTESTINAL EFFECT OF SHATAVARI GHRITA – A LITERARY REVIEW

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ABSTRACT
Shatavari Ghrita is one of the herbal medicines containing Shatavari *(Asparagus racemosus)* root, milk and ghee. This has been described for treatment of various gastro intestinal disorders according to Ayurveda classical texts. The aim of present study was to collect the information of Shatavari Ghrita in order to ascertain its effect on gastro intestinal disorders, through the authentic text books, research articles, journals and web sources. Shatavari Ghrita is prepared by mixing fine powder of root of Shatavari, cow's ghee and milk in 1:4:16 proportions. Many researchers have been proved that these three ingredients are having Madura and Tikta rasa, Guru and Snigdha guna, Sheeta veerya and Madura Vipaka. Ghrita possesses shoolaprashamana, snehana, shleshmaprasadaka, agnideepana, shothahara and vranaropaka properties. Milk is having properties of rasaprasada, dahahara and shoolaprashamana. Shatavari roots contain steroidal saponins, flavonoids, alkaloids and dihydrophenanthrene derivatives which reduce the pain and burning sensation as well as other dyspeptic symptoms due to the ulcers. Therefore Shatavari Ghrita act as shoolaprashamaka, vranaropaka, dahanashana, agnideepana, shleshmavardhaka and it also can pacify Vata and Pitta doshas. Further research shows that Shatavari Ghrita acts as a cyto-protective agent to protect the gastro-duodenal mucosa damaged by its hostile environment and as an enhancer of Prostaglandins in the form of mucosal barrier, renewal of mucosal cells and by increasing mucosal blood flow. In present article shows efficacy of Shatavari Ghrita in order to cure the different kind of gastro intestinal disorders are delineated precisely.

KEYWORDS: Gastro-intestinal disorders, Shatavari Ghrita, *Asparagus racemosus.*

INTRODUCTION
Ghrita is one of the Ayurvedic drugs that contain ghee as the base to dissolve the active therapeutic principles from the ingredients. Among the sneha dravya mentioned in Ayurveda, ghrita is par excellence because of its power to assimilate effectively the properties of the substances.[1] Shatavari Ghrita (SG) is a herbal medicine containing Shatavari *(Asparagus racemosus)* root, milk and ghee.[2] This has been described for treatment of many gastro intestinal (GI) disorders in classical texts; Chakradatta, Yoga Ratnakara and Bhaisajya Ratnavali are among them. According to Ayurveda, GI disorders mainly caused by imbalance of agni and increase of pitta. Therefore pitta alleviation treatment is essential in these conditions. The aim of this study was to gather the information on scientific validity of Shatavari Ghrita in GI disorders.

Pharmacology and properties of ingredients of Shatavari Ghrita
SG is prepared by combining of three components; Kalka of Shatavari(a fine paste of root of Shatavari), cow's ghee and cow's milk in 1:4:16 proportions.[3]

Table – 1: Pharmacology of Shatavari (*Asparagus racemosus)* in Ayurveda[4]

	Properties and actions				
	Rasa	Guna	Veerya	Vipaka	Main actions
Shatavari *(Asparagus racemosus)*	Madura Tikta	Guru Snigdha	Sheeta	Madura	Pacify Vata and Pitta

Properties of Shatavari in Ayurveda
Dosha karma: Vatapitta shamaka.[5]
Karma: Vedanasthapana, medhya, rakta-pitta shamaka, Rasayana, Chakshushya, nadibalakara, shoolhara, balya, grahi, garbhaposhaka, stanyajanana, shukrala, mutrala.

The roots are bitter, sweet, cooling, stomachic, constipating, rejuvenating, carminative, appetizer, antispasmodic and tonic. They are useful in nervous disorders, dyspepsia, diarrhoea, dysentery, burning sensation, polydypsia, hyperacidity, colic and general debility.[6]

Rogaghnata: Apasmara, murcha, vatavyadhi, Amlapitta, shoola, grahani, arsha, hridroga, raktapitta, shotha, stanyakshaya, shukrakshaya, mutrakrichcha, kshaya, daurbalya. Dristhimandya.[7]

Asparagus racemosus is recommended in Ayurvedic texts for the prevention and treatment of gastric ulcers, dyspepsia and as a galactogogue. A. racemosus has also been used successfully by some Ayurvedic practitioners for nervous disorders.[8]

Chemical constituents of Shatavari[9]
Major Chemicals: Steroidal glycosides Shatavarin I – IV, Polycyclic alkaloid and 9, 10-Dihydrophenanthrene derivative (Racemosol).

Other Chemicals: Different terpenoids, Steroids, Saponins, Amino acids, Proteins, High levels of minerals and trace elements, Polycyclic alkaloid asparagamine A and disaccharides.

Pharmacological Activities of Shatavari[10],[11]
Antitussive -The methanol extract of *Asparagus racemosus* root shows significant antitussive activity on sulfur dioxide induced cough in mice.

Antioxidant - Studies supported the fact that Asparagus racemosus is a potential oxidant and it can be used therapeutically to capture free radicals generating in the body.

Immunomodulator - It has immune enhancing property by means of enhancing defense functions like leucocytosis and neutrophilia.

Antimicrobial - Different concentrations of the extracts of the roots of asparagus racemosus, showed considerable in vitro antibacterial efficacy against E-coli, shigelladysenteriae, salmonella typhi, staphylococcus etc.

Cardiac tonic - It increases the force and rate of contraction in isolated frogs' heart at moderate rates.

Digestive - Both aerial parts and roots of Asparagus racemosus have amylase and lipase activities. Thus have digestive properties.

Anti- allergic - The root extracts exhibit anti allergic activity. It appears to increase the number of stem cells in the marrow and lymph tissue and stimulates their development into active immune cells.

Anti-oxytocic - Crude extract of Asparagus racemosus increases the uterine weight in estrogen primed group in experimental subjects. The saponin fraction of extract exhibits anti oxytocic activity producing a specific block of the pitocin introduced contractions.

Estrogenic - Predominant cornification of epithelial cells has been observed due to presence of estrogenic activity in shatavari.

Others - Shatavari also exhibits some other functions like, mucilaginous, anti-diarrhoeal, anti- dysenteric, anti-fungal, anti-cancerous, anti-abortificiant (Shatavarin I), anti-viral, anti-amoebic, adaptogen, diuretic, nutritive, tonic, galactogogue, aphrodisiac, antispasmodic, uterine relaxant, stomachic, hypotensive, gastric sedative and anti-ulcer properties.

Many pharmacological researches have been done on *Asparagus racemosus(willed)* all over the world. Some of them are as follows;

Table 2: Pharmacological research on Shatavari.[12]

Research	Reference
1. Anti-dyspeptic action	Dalvi et al. (1990)
2.Anti-ulcerogenicaction	Singh and Singh(1986)
3. Anti-Stress action	Bhattacharya et al. (2002)
4. Antibacterial activity	Mandal et al. (2000)
5.Immunomodulatory, Immuno-adjuvant	Gautamet al. (2004), Thatte et al. (1987), Diwanay et al. (2004), Rege et al. (1989)
6. Antioxidant	Kamat et al. (2000)
7. Anti- diarrhoeal action	Nanal et al. (1974), Venkatesan et al. (2005)
8. Reversal of neuronal damage	Parihar and Hemnani (2004)

Properties of Cow's milk in Ayurveda
Alpābhishyandī goksheeram snigdham guru rasāyanam
Raktapitta harahsheetam madhuram rasa pākayo
Jeevaneeyam thatā vātapittaghnam param smrutam
(Su.Su.45/50-51)

Cow's milk is slightly slimy (which causes moistening in channels of dosha, dhatu and mala), unctuous, heavy, rasayana, alleviates intrinsic haemorrhage, cold, sweet in taste and final transformation, wholesome for life and excellent pacifier of Vata and Pitta.[13]

Properties of Cow's ghee in Ayurveda
Vipāke madhuram sheetam vāta pitta vishāpaham
Chakshūsyamāgrayam balyam cha gavyam sarpirgunottaram
(Su.Su.45/97)

Cow's ghee is sweet in vipaka, sheetaveerya, alleviates vata, pitta and poisons and it is excellently wholesome for eyes, strength promoting and superior in qualities.[14]

DISCUSSION

Mode of action of Shatavari Ghrita

Ayurveda pharmacology shows that three ingredients of Shatavari Ghrita are having madura and tikta rasa, guru and snigdha guna, sheetaveerya and maduraVipaka. As per dosha karma they can pacify Vata and Pitta dosha.[2,13,14] Ghrita is having the actions of Shoolaprashamana, Snehana, Shleshmaprasadaka, Agni deepana, Shothahara and Vranaropaka.[13] Milk is having properties of Rasaprasada, Dahahara and Shoolaprashamana.[14] Therefore SG act as Shoolaprashamaka, Vranaropaka, Daha nashana, Agni deepana, Shleshmavardhaka and it also can pacify Vata and Pitta dosha. Therefore this drug is having the properties that very useful in treatment of GI disorders.

Many pharmacological researches have been proved anti-acid-dyspeptic (Dalvi et al. 1990), anti-ulcer(Singh and Singh-1986), anti-Stress(Bhattacharya et al. - 2002), antibacterial(Mandal et al. 2000), Immune-modulatory(Gautamet al. -2004, Thatte et al. -1987, Diwanay et al. -2004, Rege et al. -1989), antioxidant(Kamat et al. 2000), and anti-diarrheal(Nanal et al. 1974, Venkatesan et al. 2005)actions. Further research shows that SG acts as a cyto-protective agent to protect the gastro-duodenal mucosa damaged by its hostile environment (Hollander & Tarnowsk, 1996) and as an enhancer to the role of Prostaglandins (Deb et al, 1998) in the form of mucosal barrier, renewal of mucosal cells and by increasing mucosal blood flow.

Shatavari Ghrita act as cytoprotective agent

Cytoprotection refers to protection of the gastro-duodenal mucosa damaged by its hostile environment. The mucosa is attacked by acid, pepsin, bile acid and pancreatic enzymes.[15]

Epithelial layer of stomach is lubricated one, Ghrita itself has same characteristics. Therefore both together form a gel over the surface epithelial layer of stomach. This layer of gel prevents the back diffusion of H^+ to epithelium.[16]

These results into;

- No chance of more injury to the epithelium.
- Enhances mucus secretion from epithelial cells.
- Renewal of mucosal cells rapidly.
- Lubrication prevent mechanical abrasions.
- HCO-3 layer get balancing state.

Shatavari Ghrita is a fat having chains of fatty acid. Fat stimulates secretion of cholecystokinin-pancreozymin (CCK-PZ) in the duodenum and upper jejunum.[17] This CCK-PZ contracts the gall bladder (GB) and bile comes out from GB to duodenum helps in breakdown of fat to fatty acid with the help of lipase (Gastric lipase and pancreatic lipase). Essential fatty acids can be rapidly converted to prostaglandin (PGE) by the gastro intestinal mucosa. (Hollander & Tarnowski, 1996).

Shatavari Ghrita as an enhancer to the role of Prostaglandins

There are many actions of Prostaglandins (PG) in the gastrointestinal tract.[18] Shatavari Ghrita is helpful to improve the functions of PG as follows:

Mucosal barrier – PG prevents disruption of the mucosal barrier by aspirin, alcohol and bile salts.[19]

Mucous and HCO^-_3 secretions - Several PGs stimulate HCO^-_3 secretion and the pH gradient within the gel mucosal layer is said to be increased in thickness by PGs.

Renewal of mucosal cells – Agents such as alcohol, acid and NSAIDs increases epithelial cell loss but PG causes vigorous protein synthesis which help in the cell renewal, so pretreatment of the mucosa with PGs prevents this loss.[20]

Increased mucosal blood flow – PGE_2, PGI_2 are capillary vasodilators, so mucosal blood flow is increased by PG which helps in rapid cell proliferation and secretion of HCO^-_3 and mucus.[21]

CONCLUSION

All these studies have been scientifically proved the efficacy of Shatavari Ghrita on Gastrointestinal disorders.

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