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Popular Article

Ethnoveterinary practices for the treatment and control of mastitis

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India is one of the top milk-producing countries in the world with a population of over 192.49 million cattle and 109.85 million buffaloes (All India Livestock Census, 2019). This huge number of cattle and buffaloes, however, produce only 198 million tons of milk per annum. Poor genetic potential and nutritional and managemental practices, especially those affecting the health of milk-producing organs (udder) are the major factors for low milk production in these animals.

Mastitis is the outcome of a complex interaction between the host (cows, buffaloes, etc.), causative agents (microorganisms), and environment, and is the most costly disease in the dairy industry all over the world. Annual economic losses in dairy sector in India on account of udder infections is Rs. 6053.21 crores. (Dua *et al*., 2001). It globally leads to losses of 53 billion dollars annually (Ratafia, 1987) to the dairy sector by decreasing milk quantity, and milk quality and increasing the culling of productive animals. Wilson *et al*., 2004 reported approximately 700kg milk loss due to clinical mastitis in cows in first lactation and almost 1200kgs in second and higher lactation. The commonly practiced antibiotic treatment for the cure of clinical mastitis sometimes denotes poor results. Failure of the antibiotics to reach the site of infection in adequate concentrations, development of resistance to antibiotics, bacterial dormancy, L-form of bacteria (which are not sensitive to the antibiotics acting on cell wall), detrimental nature of some antibiotics to phagocytosis and incompatibility of antibacterial with milk have been implicated for sub-optimal results in the therapy of mastitis with antibiotics.

The use of ethnoveterinary medicine (EVM) may present a cheaper and more sustainable alternative to synthetic medicines. Also, development of antimicrobial resistance and concept of organic milk may emphasize more on use of ethnoveterinary practices. These herbal preparations, drawing upon centuries of traditional belief and use, are in practice over time by pastoralists and farmers for treating different ailments of human and animals, using medicinal plants either in the form of whole plants or plant extracts is as old as human civilization. In India, drugs of herbal origin have been used in traditional systems of medicine such as Unani and Ayurveda. The drugs are derived either from the whole plant or from leaves, stem, bark, root, flower, seed, etc.

Table No. 1: Plant species used in treatment and control of mastitis

Botanical name / Common name	Parts used	Use
Allium sativum (Lehson/thoom)	Rhizome	250g, grinded with butter and administered orally for 7 days.
Amomum subulatum (Baree Ilaichee)	Fruit	25g, given orally for 3 days.
Brassica compestress (Sarsson)	Seed oil	500ml, given orally for 10 days.
Brassica compestres + *Curcuma longa* (Sarsson + Haldi)	Seeds + root	250g seeds are grinded with 50g root and administered orally for 5 days
Capparis deciduas (Karir or Dillay)	Fruit	50g, administered orally for 3 days.
Capsicum annuum (Lal mirch)	Fruit/whole plant	50g, given orally for 8 days.
Centratherum anthelmisticum (Kali Zeeri)	Seeds	50g, mixed in wheat flour and given orally for 5 days.
Citrullus colocynthis (Indryan/Kor tuma)	Fruit	2-3 pieces given orally daily for 5 days.
Citrus limon (Khatian)	Fruit	250g, cut and placed in dew drops for whole night, common salt is dusted and administered orally for 5 days.
Cuminum cyminum (Sufaid zeera)	Seeds	1 Kg, administered orally in divided doses for 6 days.
Curcuma longa (Haldi)	Roots	25g, grinded with sugar and given orally for 7 days.

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Foeniculum vulgare (Saunf)	Seeds	50g, seeds roasted on the hot plate, mixed in 125ml vegetable oil and drenched for 4 days
Galium aparine (Banafsha)	Vine	500g, given as decoction drench for 3 days
Gossypium hirsutum (Paiway/waraiwain)	Flowers	250g, boiled in 1L water to 250 ml, then drenched for 3 days.
Lepidium sativum (Halia)	Seeds	500g, boiled in 2L of milk and given orally for 8 days.
Linum usitatissimum + *Citrus limon* (Alsi + Nimbu)	Seeds + Fruit extract	25g, seeds are mixed with the extract from 3-4 *Citrus limon*, added with raw sugar and given orally for 5 days.
Nigella sativa (Kaoolnji)	Seeds	50g seeds boiled in 2L water to 250 ml and drenched for three alternate days only in winter season.
Oryza sativa (Chawal/Moonji)	Seeds	500g boiled in 2L milk + sugar 500g and administered orally for 8 days.
Peganum harmala + *Triticum Sativum* (Harmal + Wheat)	Fruit + Stem crushing (Hay)	50g + 2 Kg, fumigation of harmal by putting it on fired hay under the affected udder for 4 days.
Polygonum bistorta (Anjbar)	Bark	125g, boiled in 1L water to 250 ml, given orally for 4 days.
Rosa indica (Gulab)	Petals	750g, boil in 1L of cow milk, drenched daily for 7 days.
Saccharum officinarum (Kamad)	Extract	2 L, drenched daily for 7 days.
Sesamum indicum (Meetha tael)	Seed oil	250 ml, mixed oil in 1.5L of milk whey, and given orally for 7 days.
Zingiber officinale (Sund)	Rhizome	125g, grinded finely with sugar, given orally for 5 days
Trigonella foenumgraceum (Matheray)	Seeds	25g, paste is made with handful of wheat flour and vegetable oil and given orally for 5 days.
Ammonim Chloride	Power	30g, mixed in wheat flour and given orally for 3 days.
Artocarpus heterophyllus (Rukh Katahar)	Part inside fruit	The paste of inner part of the fruit is applied to the infected part
Asparagus racemosus (Kurilo)	Root	The paste prepared from the root is applied twice a day, at morning and evening.

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Eclipta prostrate (Bhringiraj)	Whole plant	The paste prepared from the whole plant is applied onto the infected part.
Solena heterophylla (Gol kankri)	Root	The paste prepared from root is applied to the infected part twice a day for 3-4 days.
Trichosanthes anguina (Chichindo)	Fruit	The powder paste of ripe fruit is applied to the infected part for 3-4 days.

Table No. 2: Plants used in mastitis treatment

Botanical name	**Local name**	**Parts used**	**Application**
Artocarpus heterophyllus	Rukh Katahar	Part inside fruit	The paste of inner part of the fruit is applied to the infected part
Asparagus racemosus	Kurilo	Root	The paste prepared from the root is applied twice a day, at morning and evening.
Eclipta prostrate	Bhringiraj	Whole plant	The paste prepared from the whole plant is applied onto the infected part.
Solena heterophylla	Gol kankri	Root	The paste prepared from root is applied to the infected part twice a day for 3-4 days.
Trichosanthes anguina	Chichindo	Fruit	The powder paste of ripe fruit is applied to the infected part for 3-4 days.

Conclusion

Farmers and dairymen use local treatment most of the time for controlling mastitis along with the necessary precaution of relocating the cattle to clean surroundings. This may reduce the severity and spread of infection rather than totally eradicating the disease. Treatment of a disease is based on the etiology and the effectiveness of the drugs. Mastitis is a complex disease with multiple causative agents inclusive of the host and the pathogens. Clinically, mastitis is treated with antibiotics. But the use of ethno-veterinary medicine (EVM) may present a cheaper and more sustainable alternative to synthetic medicines.

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