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A Review On Herbal Antipyretic Drug

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Abstract: Medicines and fragrant herbs have long been used in India to cure a variety of illnesses, including fever (pyrexia), a frequent disorder marked by a high body temperature and related symptoms like shivering, anorexia, and lethargy. Alternative methods are required due to the rise in antibiotic resistance, even if traditional antipyretic medications aid in controlling body temperature. Using natural bioactive ingredients, herbal antipyretics present a promising way to effectively treat fever and related diseases. With an emphasis on their antipyretic, antimicrobial, and immunomodulatory qualities, this review examines the pharmacological potential of medicinal plants like nirgundi, ginger (Zingiber officinale), baheda (Terminalia bellirica), amla (Phyllanthus emblica), tulsi (Ocimum tenuiflorum), and neem (Azadirachta indica). Flavonoids, alkaloids, terpenoids, and polyphenols are among the bioactive components that are essential for lowering fever through processes like immunological regulation, prostaglandin inhibition, and anti-inflammatory actions. These herbal medicines have been shown to be effective in clinical investigations, indicating their promise as safe and affordable substitutes for pharmaceutical drugs. Long-term safety, herb-drug interactions, and dosage standardization are still crucial factors to take into account despite their benefits. Future studies should concentrate on clarifying molecular mechanisms, refining formulations, and incorporating herbal antipyretics into conventional medicine. The importance of traditional herbal medicine in managing fevers in the modern era and its potential to provide long-lasting and efficient treatment alternatives are highlighted by this study.

Keywords: - Antipyretics, Anorexia, Aromatic plants, Prostaglandin inhibition, Zingiber officinale.

I. INTRODUCTION

Due to environmental diversity, India has a centuries-old and rich legacy of fragrant and medicinal plants that can be used to treat human ailments. Fever, pharmacologically termed as pyre, is the most prevalent ailment and is defined by a temperature increase above the typical range of 36.5 to 37.5 degrees Celsius. Fatigue, sadness, anorexia, drowsiness, and difficulty focusing are all signs of illness behavior that are linked to fever. This rise in set point causes shivering and increased muscular tone. However, antipyretic drugs can effectively reduce body temperature, potentially improving the comfort of the afflicted individual. The majority of our people relies only on medicinal plants for their healthcare needs, and traditional medicines continue to be an essential component of our health care system. Antibiotics have been used by doctors to treat infections for many years. However, the likelihood of antibiotic resistance is now increasing. Investigating other options is more crucial than ever. These "natural" antibiotics have been used for a while to treat a variety of ailments. Around the world, medicinal plants are used to make potent and effective medications. Experts are looking to natural and safe antibiotics as a backup because abuse of prescription antibiotics causes bacteria to evolve antibiotic-resistant strains, which render them ineffective in the future. Natural herb-based medicines are reasonably priced and keep well at room temperature for a long period. Complex herbal antibiotics are used to destroy bacteria, purify blood, strengthen the immune system, and enhance the operation of specific organ systems. They just eliminate microorganisms and correct bodily imbalances. While some patients choose to employ herbal remedies, natural products are not always safer than synthetic antibiotics. The research supporting herbal antibiotics should therefore be known to medical

professionals. The purpose of this review was to objectively evaluate herbal antibacterial medications that have undergone controlled clinical trials. [1]

2. ETIOLOGY

A rise in body temperature over the normal range brought on by an elevation in the hypothalamus' temperature set point is known as a fever or pyrexia. The top limits of normal body temperature range from 37.2°C to 38.3°C (99.0°F to 100.9°F). The body reacts to an increase in the set point by contracting its muscles, cooling down, and conserving heat. Sweating and flushing happen when the set point stabilizes. Fever typically does not reach 41–42°C (106–108°F), but in rare instances, especially in young infants, it might trigger febrile seizures.[2] Influenza, the common cold, meningitis, UTIs, appendicitis, Lassa fever, malaria, and COVID-19 are among the infectious disorders that can induce fever. Vasculitis, deep vein thrombosis (DVT), connective tissue disorders, adverse drug reactions, and cancer are examples of non-infectious causes. Hyperthermia, in which the body temperature rises as a result of either inadequate heat loss or excessive heat production, is not the same as fever. Fever normally doesn't need to be treated unless it causes discomfort. Pain relief and fever reduction may be aided by ibuprofen or paracetamol (acetaminophen). Infants younger than three months and people with compromised immune systems require medical care. Fever is prevalent; it affects 75% of very ill adults and 30% of pediatric healthcare visits. Fatigue, appetite loss, dehydration, fever nightmares, and delirium are common side effects. Despite being a normal defense mechanism, "fever phobia," or excessive worry about fever, can be unjustified. [3]

3. CLASSIFICATION

Body Temperature	°C	ºF
Normal	37-38	98.6 – 100.4
Mild/Low grade fever	38.1-39	100.5 – 102.2
Moderate Grade Fever	39.1-40	102.2 – 104.0
High Grade Fever	40.1-41.1	104.1 – 106.0

Table 1: - Classification types and patterns of fever [3]

4. SYMPTOMS OF FEVER

Shivering, appetite loss, weakness, drowsiness, headache, joint discomfort, and trouble focusing are all signs of a fever. A fever lasting more than 48 hours, shortness of breath, mental fog, a persistent headache, and a temperature exceeding 103°F are warning signals. If these happen, get medical attention. A CBC, blood cultures, Widal test, chest X-ray, and urinalysis are all used in the diagnosis process. An antipyretic was used by the plant. [4]

5. PLANT USED IN ANTIPYRETIC

Teas, syrups, oils, capsules, and extracts such as tinctures, decoctions, and macerates are just a few of the ways that herbs and plants can be used. Compositions differ since there is no standard. Tulsi, ashwagandha, arjuna, and neem are among the medicinal herbs that have been used to treat fevers. Cleome viscosa, Bauhinia racemosa, and Acacia catechu extracts exhibit antipyretic properties.[5] Some significant plants and trees, along with their popular names, botanical names, families, parts that are used as herbs, and significant biological effects, include :-

S.No	Common Name	Botanical Name	Part used	Family	Uses
1	Tulsi	Ocimum sanctum	Leaves	Labiatae	Antipyretic; Antitussive
2	Neem	Azadirachta indica	Leaves	Meliaceae	Antipyretic; Antiseptic
3	Brahmi	Centella asiatica	Whole Plant	Umbelliferae	Antipyretic; Blood purifier
4	Amla	Emblica officinalis	Fruits	Euphorbiaceae	Antipyretic
5	Dhaniya	Coriandrum sativum	Fruits	Umbelliferae	Antipyretic; Carminative
6	Satavari	Asparagus adscendens	Roots	Liliaceae	Antipyretic; Nutritive tonic
7	Bahera	Terminalia belerica	Fruit	Combretaceae	Antipyretic
8	Cinchona	Cinchona officinalis	Bark	Rubiaceae	Antipyretic
9	Bhindi	Abelmoschus esculentus	Fruit	Malvaceae	Antipyretic
10	Imli	Tamarindus indica	Fruits	Caesalpiniaceae	Antipyretic; Carminative
11	Chandan	Santalum album	Wood	Santalaceae	Antipyretic; Sedative
12	Palwal	Trichosanthes dioica	Fruits	Cucurbitaceae	Antipyretic; Laxative
13	Nirgundi	Vitex negundo	Fruits; Bark; Leaves	Verbenaceae	Antipyretic
14	Bish	Aconitum ferox	Root	Ranunculaceae	Antipyretic; Antiseptic
15	Datiyani	Alstonia scholaris	Milky Latex	Apocynaceae	Stimulant; Antipyretic
16	Gulanch	Coscinium fenestratum	Leaves; Stem; Root	Menispermaceae	Antipyretic
17	Jhar Haldi	Coscinium fenestratum	Root	Menispermaceae	Antipyretic
18	Kanta-Kala	Daemia extensa	Leaves; Roots	Asclepiadaceae	Antipyretic

19	Chirayta	Swertia chirata	Whole Herb	Gentianaceae	Antipyretic
20	Guruch	Tinospora cordifolia	Stem; Root	Menispermaceae	Antipyretic; Antidote
21	Jahangir	Lawsonia inermis	Leaves	Lythraceae	Antipyretic
22	Lahusan	Allium sativum	Bulb	Liliaceae	Antipyretic
23	Kasondi	Cassia occidentalis	Leaves; Seeds	Caesalpiniaceae	Antipyretic; Purgative
24	Bhringaraj	Eclipta erecta	Roots; Leaves	Compositae	Antipyretic; Tonic
25	Akasbel	Cuscuta reflexa	Seeds; Stem	Convolvulaceae	Antipyretic; Carminative
26	Chhota Dhatura	Achyranthes aspera	Leaves; Bark; Oil	Amaranthaceae	Antipyretic
27	Cashew	Anacardium occidentale	Leaves; Dried Bark; Oil	Anacardiaceae	Antipyretic; Irritant
28	Ganja	Cannabis sativa	Leaves; Dried Flourrescence	Cannabaceae	Antipyretic; Analgesic
29	Wild mint	Lantana involucrate	Whole Herb	Verbenaceae	Antipyretic
30	Bitter gourd	Momordica charantia	Fruit; Leaves; Seeds	Cucurbitaceae	Antipyretic; Stimulant
31	Bamboo	Bambusa vulgaris	Shoot; Seeds; Roots; Leaves	Graminae	Antipyretic; Diuretic
32	Australian fever tree	Eucalyptus globules	Dried leaves; Gum; Oil	Myrtaceae	Antipyretic; Carminative
33	Pan	Piper betel	Leaves	Piperaceae	Antipyretic; Carminative
34	Yellow Cedar	Tecoma stans	Wood; Oil	Bognoniaceae	Antipyretic; Sedative

Table 2: - List of plant used as antipyretics [5]

6. KEY MEDICINAL PLANTS AND THEIR THERAPEUTIC BENEFITS

Many medicinal plants have long been used to treat fevers because they have strong antipyretic effects. These include the antimicrobial and anti-inflammatory properties of neem (*Azadirachta indica*), the immune-boosting and respiratory health-promoting properties of tulsi (*Ocimum tenuiflorum*), the

powerful antioxidant and immune-boosting properties of amla (*Phyllanthus emblica*), the analgesic and anti-inflammatory properties of nirgundi, the digestive and nausea-relieving properties of ginger (*Zingiber officinale*), and the medicinal properties of baheda (*Terminalia bellirica*). [6] These plants, which are abundant in bioactive chemicals, provide safe, all-natural ways to treat fever. There are certain crucial aspects about the plants.

1. Tulsi :- *Ocimum tenuiflorum* is a fragrant perennial plant belonging to the Lamiaceae family that is also referred to as holy basil or tulsi. indigenous to tropical and subtropical areas, such as Malesia and Australia.[7] Known for its healing qualities, tulsi is used to cure a variety of conditions, including fever, respiratory problems, headaches, kidney stones, heart problems, and insect bites. Its main components, linalool, eugenol, methyl chavicol, and methyl cinnamonate, are rich in bioactive chemicals and help to provide its antibacterial, anti-inflammatory, and stress-relieving properties. Genus: Ocimum Kingdom: Plantae Lamiales is the order.

Fig.1 :- Tulsi [7]

2. Neem :- *Azadirachta indica* is a member of the Meliaceae (mahogany) family and is often referred to as neem, margosa, nimtree, or Indian lilac. It is well known for its therapeutic qualities.fever, infections, inflammation, skin conditions, and dental issues. Azadirachtin is the main active ingredient in neem, which is abundant in bioactive chemicals. Nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin are additional significant chemicals that contribute to its antibacterial, anti-inflammatory, and therapeutic properties. [8,9]

Fig. 2:- Neem[8]

3. Amla:- Native to tropical and southern Asia, *Phyllanthus emblica* is a deciduous tree in the Phyllanthaceae family that is also referred to as amla or Indian gooseberry. The fruit is utilized extensively for its therapeutic properties, which include treating inflammation, liver problems, digestive disorders, fever, and colds. It also has laxative, diuretic, and hair-tonic properties.[10] Ellagic acid, gallic acid, emblicanin A and B, phyllembein, quercetin, and ascorbic acid are important chemical components that support its medicinal qualities.[11]

Fig. 3 Amla [11]

4. Nirgundi :- In traditional medicine, nigundi, a big, fragrant shrub that grows in warmer parts of India, is used to treat a variety of illnesses. It is used to treat fever, arthritis, respiratory problems, inflammation, and pain in Ayurvedic, Unani, and Siddha systems. It is a potent therapeutic herb because of its active chemical components, which include flavonoids, volatile oils, triterpenes, diterpenes, lignans, flavones, glycosides, and iridoid glycosides. [12,13]

Fig. 4: - Nirgundi [13]

5. Brahmi :- Brahmi is a popular Ayurvedic herb used to treat memory problems and improve cognitive function. It is sometimes referred to as Indian pennywort or water hyssop. Its powerful therapeutic qualities are acknowledged by both Chinese and Indian traditional medicine. Hersaponin, apigenin, brahmine, herpestine, nicotine, and monnierasides are some of its main chemical constituents that support its neuroprotective properties.[14]

Fig. 5: - Brahmi [14]

6. Kali Mirch:- Black pepper (Piper nigrum), often known as kali mirch, is a popular spice with several medical applications. It improves digestion, stimulates metabolism, treats diarrhea, and relieves respiratory problems.[15] When applied topically, it can relieve skin problems and nerve discomfort. Piperine, terpenes, and flavones are its principal chemical components, all of which contribute to antibacterial and antioxidant activity. [14,15]

Fig. 6:- Kali-Mirch [15]

7. SUMMARY

Fever, a natural physiological response to infection and inflammation, has been treated in numerous ways throughout human history. Herbal antipyretics stand out as a viable option for combining traditional wisdom with modern scientific study. This review will dive into the efficacy, safety, and mechanisms of action of herbal antipyretics, providing insights into their potential as fever[24,25]

For millennia, herbal treatments have been an integral part of healthcare practices across cultures. Plants having antipyretic qualities have been used to treat fevers since ancient civilizations and tribal people. Examining ancient literature and ethnobotanical archives yields a rich tapestry of traditional knowledge on herbal antipyretics, which informs modern research efforts. The plant world is rich in species that contain antipyretic chemicals. This section delves into the phytochemical elements of well-known herbal antipyretics, including flavonoids, alkaloids, terpenoids, and phenolic chemicals. Understanding the chemical makeup of these plants lays the groundwork for determining their medicinal value.[26] Herbal antipyretics reduce fevers by a variety of ways. These botanicals interact with the body's physiological pathways in complex ways, such as modifying pro-inflammatory cytokines, suppressing prostaglandin formation, and improving immunological function. Understanding the molecular basis of herbal antipyresis sheds information on their pharmacological effects and therapeutic implications.

Clinical research on the efficacy of herbal antipyretics provide important insights into their practical application. Evidence-based assessments, ranging from randomized controlled trials to systematic reviews, give a critical evaluation of herbal therapies for fever management. This section assesses the strength of evidence supporting the use of certain herbal treatments, focusing on their comparative efficacy and safety profiles. While herbal antipyretics are generally considered safe, concerns about toxicity, herb-drug interactions, and long-term use should be addressed. Assessing the safety profiles of these botanicals, including potential side effects and contraindications, educates both healthcare practitioners and consumers on responsible use practices.

With the growing interest in herbal therapy, future research may expand our understanding of herbal antipyretics. From elucidating novel mechanisms of action to exploring synergistic combinations with conventional medications, there are several prospects for innovation. The integration of herbal antipyretics into routine medical practices has important implications for public health, fever control, and patient-centered care.

8. CONCLUSION

In summary, herbal antipyretics offer a wealth of therapeutic potential that helps to bridge the gap between traditional and modern medical practices. These herbal treatments provide a convincing substitute for treating fevers through thorough scientific research and evidence-based practice, demonstrating the perennial value of nature's pharmacopeia in advancing human health and wellbeing.

9. REFERENCES

1. Guy, B., & Almond, J. W. (2008). Towards a dengue vaccine: Progress, challenges, and companies. *Immunology, Microbiology, and Infections, 3*, 219–252.

2. Horbach, I. (2007). Vaccines against dengue: A review of current candidate vaccine development stages. *Revista Panamericana de Salud Pública, 21*, 254–260.

3. Whitehead, S. S., et al. (2007). Prospects for a dengue virus vaccine. *Nature Reviews Microbiology, 5*, 518–528.

4. Anderson, K. B., et al. (2007). Burden of symptomatic dengue infection in children at a primary school in Thailand: A prospective study. *The Lancet, 369*, 1452–1459.

5. Clark, D. V. (2005). Economic impact of dengue fever/dengue hemorrhagic fever in Thailand at the family and population levels. *American Journal of Tropical Medicine and Hygiene, 72*, 786–791.

6. Halstead, S. B., Suaya, J. A., & Shepard, D. S. (2007). The burden of dengue infection. *The Lancet, 369*, 1410–1411.

7. Shepard, D. S. (2004). Effectiveness of a paediatric dengue vaccine. *Vaccine, 22*, 1275–1280.

8. Horbach, J., et al. (2007). Scientific consultation on immunological correlates of protection induced by dengue vaccines: Report from a meeting held at the World Health Organization, 12–18 November 2005. *Vaccine, 25*, 4130–4139.

9. Fames, B. L., et al. (1998). Virulence of a live dengue virus vaccine candidate: A possible new marker of dengue virus attenuation. *Journal of Infectious Diseases, 158*, 876–880.

10. Chanthavanich, P. C., et al. (2006). Immune response and occurrence of dengue infection in Thai children three to eight years after vaccination with live attenuated tetravalent dengue vaccine. *American Journal of Tropical Medicine and Hygiene, 75*, 26–28.

11. Edelman, R., & Hombach, J. (2008). Guidelines for the clinical evaluation of dengue vaccines in endemic areas: Summary of a World Health Organization technical consultation. *Vaccine, 26*(33), 4113–4119.

12. World Health Organization (WHO). (2007). *Vaccine introduction guidelines*. Geneva, Switzerland: WHO.

13. Ohen, D., et al. (2004). A 7-deaza-adenosine analog is a potent and selective inhibitor of hepatitis C virus replication with excellent pharmacokinetic properties. *Antimicrobial Agents and Chemotherapy,*

48(10), 3944–3953.

14. Goncalvez, A. P., et al. (2007). Monoclonal antibody-mediated enhancement of dengue virus infection in vitro and in vivo and strategies for prevention. *Proceedings of the National Academy of Sciences of the United States of America, 104*, 9422–9437.

15. Halstead, S. B. (1979). In vivo enhancement of dengue virus infection in rhesus monkeys by passively transferred antibody. *Journal of Infectious Diseases, 140*, 527–533.

16. Balsitis, S. I., & Harris, E. (2009). Animal models of dengue virus infection: Applications and insights. In K. A. Hanley & S. C. Weaver (Eds.), *Frontiers in dengue virus research*. Norwich, UK: Horizon Scientific Press.

17. Keller, T. H., et al. (2006). Finding new medicines for flaviviral targets. *Novartis Foundation Symposium, 277*, 102–114.

18. Johnston, P. A., et al. (2007). HTS identifies novel and specific uncompetitive inhibitors of the two-component NS2B-NS3 proteinase of West Nile virus. *Assay and Drug Development Technologies, 5*(6), 737–750.

19. Luzhkov, V. R., et al. (2007). Virtual screening and bioassay study of novel inhibitors for dengue virus mRNA cap (nucleoside-2'-O)-methyltransferase. *Bioorganic & Medicinal Chemistry, 15*, 7795–7802.

20. Pavani, A. N., Somashekara, S. C., Jagannath, N., Govindadas, D., & Shravani, P. (2013). Antipyretic activity of *Piper nigrum* in Wistar albino rats. *International Journal of Pharmaceutical and Biomedical Research, 4*(3), 167–169.

21. Rajani, A., Swathi, M., Madhuri, M., Begum, S. A., Reddy, M. V. V., & Hemamalini. (2014). Anti-pyretic activity of methanolic extract of *Picrorhiza kurroa* Royle ex. Benth. *International Journal of Pharmacy and Biological Sciences, 5*(1), 340–343.

22. Global Journal of Research on Medicinal Plants & Indigenous Medicine. (2015). *4*(7), 147–161.

23. Milton, A. S. (1976). Modern views on the pathogenesis of fever and the mode of action of antipyretic drugs. *Journal of Pharmacy and Pharmacology, 28*, 393–399.

24. Aronoff, D. M., & Neilson, E. G. (2001). Antipyretics: Mechanisms of action and clinical use in fever suppression. *American Journal of Medicine, 111*(4), 304–315. Arora Manu, Sharma Tanvi, Devi Anu, Bainsal Neeraj, Siddiqui Anees Ahmad (2012) An Inside Review Of Cissampelos Pareira Linn: A Potential edicinal Plant Of India, International Research Journal Of Pharmacy 3(12):38–41

25. Arul Daniel, J., Ragavee, A., Sabina, E. P., & Asha Devi, S. (2014). Evaluation of analgesic, antipyretic, and ulcerogenic activities of *Acorus calamus* rhizome extract in Swiss albino mice. *Research Journal of Pharmaceutical, Biological and Chemical Sciences, 5*(6), 503.

26. /v1/AUTH_mw/wikipedia-commons-local-public.4a/4/4a/Tulsi_or_Holy_basil_in_India.jp

27. Deb, A., Barua, S., & Das, B. (2016). Pharmacological activities of Baheda (Terminalia bellerica): a review. *Journal of pharmacognosy and phytochemistry*, *5*(1), 194.

28. Mahato, D., & Sharma, H. P. (2018). Kali Haldi, an ethnomedicinal plant of Jharkhand state-A review.

29. Panchal Bhavini, V., & Jha, P. J. Exploring and analysing records of export of some vegetables from different ports of India.