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Original Article

Treating Roots Of Malaria Infection-A Herbal Insight

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ABSTRACT

Global estimates on malaria deaths recommend the vector infection as a public health threat that is leading to complications. The mosquito-transmitted illness malaria has fatal complications if neglected. The Plasmodium genus of single-celled bacteria is responsible for malaria transmitted by the bites of infected Anopheles mosquitoes. There is need to suggest potential alternate therapy with few side effects and eradicate malaria from roots without further complications. A more effective study led to the selection of the herbal treatment which employed Calotropis gigantea as potential herb with activity against the parasite to be taken along with milk, jaggery, and sugar, all of which aid in the treatment of the illness popularly a one-time effect. Further the therapy also increases the body's resistance against disease. This herbal medication aids in the treatment of severe malaria and prevents recurrence over the long term. The herbal treatment has no side effects. The global funding on Malaria management could be made cost effective by this herbal treatment with ailment form the root cause. Further no reoccurrence during one's lifetime, with common side symptoms is a advantage and proven beneficial.

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Introduction

Plasmodium parasites, which people contract by being bitten by infected female Anopheles mosquitoes, are the source of the acute fever sickness known as malaria. Two of the five parasite species that cause malaria in humans—P. falciparum and P. vivax—pose the biggest risks.

Plasmodium falciparum is typically regarded as the most significant in terms of mortality. Six plasmodia species provide a considerable health danger to humans. The Global World malaria report reported 241 million malaria cases in 2020 as compared to 227 million cases in 2019.

The estimated malaria deaths are 6, 27,000 in 2020 – an increase of 69,000 deaths over the previous year (WHO, 2022). Goal of ending malaria as a public health threat by2030 is at stake, and, with it, the lives of hundreds of thousands of people each year.

The deaths are severe in African children with 96% in children under 5 years of age. The most common and lethal malaria parasite on the African continent is P. falciparum.

In the majority of nations outside of sub- Saharan Africa, P. vivax is the predominant malaria parasite [2]. P. vivax is a parasite that is a major source of disease in many regions of the world, and there is growing evidence to suggest that the number of deaths caused by this parasite has been under reported [3, 4].

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Less frequently occurring major disease-causing organisms include P. ovale curtisi, P. ovale wallikeri, and P. malaria. With no conclusive evidence of primary human-to-human transmission, the simian parasite P. knowlesi has recently become a minor but significant source of disease (including severe disease) in Malaysia and other parts of Southeast Asia [5]. The clinical signs at disease initiation, which has helped to develop an integrated approach to better manage and treat severe malaria [6].

The initial symptoms of malaria, which include fever, headache, and chills, can be mild and challenging to diagnose. They typically present 10 to 15 days after the infecting insect bite. Malaria caused by P. falciparum, which is not treated, has a 24-hour time window in which it might proceed to severe disease and death [1-5].

Clinical manifestations of severe malaria include Acute pulmonary edema, Acute renal failure, Jaundice, Circulatory collapse, Hyperparasitaemia, High fever, Electrolyte disturbances, Convulsions, Unrousable coma (caused by cerebral malaria), Malarial anemia[6, 7], Hemoglobinuria, Hypoglycemia, Metabolic acidosis (associated with respiratory distress), Spontaneous bleeding clinical manifestations of severe malaria.

Epidemiology

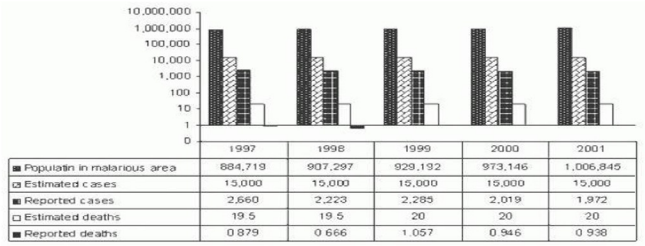
In 2020, there were 241 million instances of malaria, up from 227 million in 2019, according to the most recent global malaria data. In 2020, 627 000 people were predicted to die from malaria, which is a 69 000-death increase over 2019. While the COVID-19 pandemic was responsible for around two thirds of these deaths (47 000), the remaining one third (22 000) are attributable to a recent modification in WHO's methodology for measuring malaria mortality (irrespective of COVID-19disruptions) (WHO,2022).With 32 nation sin sub-Saharan Africa accounting for 93 % of all malaria deaths worldwide, the new cause-of-death methodology was used there.

The methodology's application showed that, compared to earlier estimates, the annual death toll from malaria among African children had increased significantly since 2000. The burden of malaria in the

world is still disproportionately heavy in the WHO African Region. 96% of malaria deaths and 95% of all cases occurred in the Region in 2020. In the Region, % of all malaria deaths were in children under the age of five. Just over half of all malaria deaths worldwide were caused by four African nations: Nigeria (31.9%), the Democratic Republic of the Congo (13.2%), the United Republic of Tanzania (4.1%), and Mozambique (3.8%). WHO estimates that Indiareports15 million cases of malaria with annul number of 19,500–20,000 deaths.

The raised alarms of the malaria infection suggest that there is need of suggestive measures to prevent complications of malaria and prevent reoccurrence of the infection. Thus this review suggest that the benefit of herbal cost effective and potential remedy using a commonly available plant with wide pharmacological activities and also the procedure to formulate it into a medicine suitable
for malaria treatment.

Figure1: Estimates that India as reported (WHO SEARO website).



	1997	1998	1999	2000	2001
Population in malarious area	884,719	907,297	929,192	973,146	1,006,845
Estimated cases	15,000	15,000	15,000	15,000	15,000
Reported cases	2,660	2,223	2,285	2,019	1,972
Estimated deaths	19.5	19.5	20	20	20
Reported deaths	0.879	0.666	1.057	0.946	0.938

Suggested Herbal Remedy- Importance of Calotropis gigantea herb along with Cow's milk for the treatment of malaria

Phytochemical nature and pharmacological importance of Calotropis gigantean

The plant is commonly called as Giant Milkweed, Crown Flower, Swallow Wart popularly an ayurvedic medication arka (Calotropis gigantea),—Arka—proposed in Vedic literature and shape of the leaves used in sacrificial rites[10]. The herb Calotropis gigantea is referred to as "Sweta Arka" and Caotropis procera as "Raktha Arka" in traditional ayurvedic medicine [8]. Both of them have similar pharmacological effects and frequently share similar botanical characteristics [9].

Studies on the photochemistry of Calotropis that include Cardenolide, triterpinoids, alkaloids, resins, anthocyanins, and proteolytic enzymes in latex, as well as flavonoids, tannins, sterol, saponins, and cardiac glycosides[10]. Leaves contain found in the leaves are amyrin, amyrin acetate, ß-sitosterol, urosolic acid, cardenolides, calotropin, and calotropagenin. The flower contains polysaccharides containing D-arabinose, glucose, glucosamine, and L-rhamnose, as well as queretin-3-ratinoside, flavonoids, calactin, sterol, calotropagenin, calotoxin, and calotropin. Additionally, 3-proteinase and calotropain are found in flowers (protease).

The plant was reported to have Cytotoxic activity, Antimicrobial activity, Wound healing activity, Analgesic activity, Anti-pyretic activity, Anti-diarrheal activity, Insecticidal activity, Anti-inflammatory, Antioxidant activity, Pregnancy interceptive properties, Procoagulant activity, Hepatoprotective effects, Vasodilation Effect on blood vessels. This proving health benefits suggest the potential of the herb for the malaria treatment.

Cow's milk

The ingredient lactoferrin in cow's milk is a non-immune defense acts as a mediator linking for innate and adaptive immune responses which is easily available and much needed substitute for children and adults as nutraceutical protein with anti-inflammatory, Antianemic, immunomodulatory, antimicrobial, anticancer and antioxidant activities.

Herbal Treatment using Calotropis gigantea-From formulation to adminsitration

Malaria drugs are like an aphrodisiac- There are numerous ways that people can contract malaria fever. In most cases, the body is undamaged. Headache, nauseousness, and vomiting are its primary side effects. It consistently appears every time (everyday and every day depending on the season). It can even turn lethal at times.

A simple and inexpensive treatment for malaria is Calotropis gigantea with cow's milk which is novel, cost effective and potential as anti-malarial agent.

Procedure for formulation:

To prevent the milk from falling underneath the tree, the branches should be trimmed and curved downward. They must be well cleaned. The milk from the tree should be captured with the tree's branches when it isn't washed to prevent it from falling to the ground. Take 400 grams of milk (cow's milk is preferable) and boil it in a steel basin. Stir the milk after adding the two branches of Calotropis gigantea to the boiling milk.

For a while, milk serves as a remedy (Figure2). Until the milk doesn't coagulate, you should stir the branches. Half of the milk should be combined with jaggery or sugar once it has curdled. (Almonds and cardamom may be added as well.) The patient should be immediately fed the coagulated milk when it has cooled. People with fevers shouldn't be taken, because malaria fever is usually occurred at night. When there is no fever, it should be taken.

Therapeutic advantage: Eradicating roots of malaria

The patient won't ever develop malaria fever again thanks to this medication. Blood tests reveal "rings" of malaria, but no fever is present.



Malaria will never again affect the patient. Children between the ages of 1and 6 shouldn't undergo this treatment. Children between the ages of 6 and 12 should only consume 200grams of milk, or half the recommended serving size.

As previously mentioned, the milk should be coagulated and given. Drinking this antidote milk will prevent future cases of malaria in people who do not now have the disease. This therapy is easily accessible to everyone because it works similarly to Rambanam for brain tonic malaria.
Figure2: simple procedure for Malaria treatment using Calotropis gigantea and cow milk

Conflicts of interest

The authors declare that there are no conflicts of interest

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