
Abstract-The medicinal value of Commiphora wightii has been believed by tribals to be mainly due to its yield of guggulipid, which has been scientifically shown to have hypocholesteromic, anti-septic, anti-pathogenic, anti-parasitic properties. It is also used for non-specific diarrhoea and dysentry. Amoebic dysentry is a common disorder of a large number of people in the tropics. In our studies we have reviewed the active principles of most known anti-amoebic plants. Further, we have tested the crude extracts of oleo-gum-resin obtained from C. wightii against Entamoeba histolytica NIH 200 using microdilution technique. They were found to be comparable with quassinoids; Ailanthinone and Bruceantin. The need for linkages between chemical characterization with established in vitro techniques is demonstrated.


Abstract- Based on the traditional usage of C. wightii as found in the semi-arid region of Rajasthan, 14 out of 52 species that are part of its plant community were found to have medicinal value. Their Importance Value Index (IVI) showed the relative ecological status for three seasons in a conserved sight (the foothills of Savitri mountain; Pushkar). C. wightii has a historical use in folk medicine and is today a highly commercially target species. Its ecological status, as reflected by the IVIs, encourages the conservation of C. wightii plant community.


Abstract- The derivation of important antimalarial compounds started with the discovery of Cinchona bark powder with wine. Subsequently post World war I, was a period of intensive work in maintaining such ethnobotanical records but none were found comparable in their efficacy and use as that of quinine which has remained the drug of choice in malaria. After World War II new chemical techniques were used to fractionate, isolate, and structure determinations, which led to an ever-increasing number of potential antiplasmodial, isolated compounds from such plants. More recently experimental studies in animals and clinical trials showed the dichotomy of CQ sensitive and CQ resistant strains of Plasmodium. This paper is an attempt to update a historical list of antimalarial plants and their natural products as studied by pharmacognostic extraction methods of crude drug research of those times. Further an attempt has been undertaken to list the compounds as classified into 3 major groups namely alkaloids, terpenes & quassinoids and aromatic & miscellaneous compounds. The most promising is a quassinoid, artemisinin derived from Artemisia annua which has caused a resurgence for the quest of the newer antimalarial compounds.

**Abstract** - *Calotropis procera* (Ait.) R.Br. commonly known as "Arka" is a popular medicinal plant found throughout the tropics of Asia and Africa and is used in many traditional systems of medicine. Importance of the various parts of this plant has been widely reported. Good record keeping of subjective and objectively recorded cures by practitioners of traditional medicinal system will help in the establishment of the use of *C. procera* as an antimalarial plant. It has been attempted to see the effect of crude fractions of its flower, bud and root against a chloroquine sensitive isolate, MRC 20 and a chloroquine resistant isolate, MRC 76 of *Plasmodium falciparum* using Desjardins method and the effectiveness of its fractions compare better with CQ sensitive isolate than the CQ resistant isolate *in vitro*.

ANNEXURE - II

1. Sharma, P. and Sharma, J.D. A review of ethnomedicine in India and development of medicinal ecology. Social Science and Medicine, (Communicated).

Abstract - There is an undeniable interrelationship between the understanding of ecosystems and the heritage of ethnomedicine which contributes to a growing pluralistic forms and descriptive terms of medical practice. The historical linkage between ethnomedicine, which depends on the natural environment and its plant resources, to the research, teaching and practice of modern medicine has taken new holistic forms. Oriental forms of traditional and folkloric uses of medicinal plants have been recorded in ancient texts like Rigveda and followed by historical texts in the Indian subcontinent. It is essential for the medical practitioner to enrich his use of plant based drug therapeutics for cost effective cure. Medicinal ecology is devoted to a better understanding of the genesis of healing arts, and the ecological perspectives of conservation in higher education.

2. Sharma, P. and Sharma, J.D. In-vitro Chloroquine Modulatory activity with some plant extracts from Calotropis procera and Commiphora wightii in P. falciparum Pharmaceutical Biology, (Communicated).

Abstract - Chloroquine modulatory activity was investigated in six ethanolic extracts, four fractions and three purified compounds of Calotropis procera Ait. (Asclepiadaceae) and gum-oleo resin of Commiphora wightii Bhand. (Burseraceae). Their toxicity was seen in their ability to cause % hemolysis at twenty minutes with 0.5mg/ml of each extract in the human erythrocytes. In these preliminary experiments the extracts of bud and flower of C. procera need further purification and isolation of its compounds if CQ potentiating action is to be studied in detail. The best Activity Enhancement Index was found with Cembrene a compound purified from gum-oleo resin of C. wightii. A chloroquine sensitive strain MRC P.f 20 and a chloroquine resistant strain MRC P.f 76 and reversal of CQ resistance response in the latter, with some crude extracts particularly with flower ethanol, flower ethylacetate and gum-resin ethanol, in combination with chloroquine. All the derivatives of gum-oleo resin of C. wightii showed promising features of CQ potentiating action with a minimal toxicity, and good reversal of CQ resistance.

3. Sharma, P. and Sharma, J.D. Plants showing antiplasmodial activity- Recent studies in their identification Indian Journal of Malariology, (Communicated).

Abstract - Historically important antimalarial compounds and various attempts in the first half of this century have been tabulated in the first part of this paper. Three decades ago CQ sensitive and CQ resistant strain of Plasmodium led to finding newer methodologies and arguments for discovering antimalarial compounds from plant products. This paper is an attempt to add to the previous list of antimalarial plants and their natural products as studied by pharmacognostic principles for the various strains of Plasmodia.


Summary - Human erythrocytes were exposed in a dose dependent manner to various ethanolic plant extracts , and fractions as obtained from plant parts of C. procera and the
gum-oleo-resin of *C. wightii* which had been screened for *in vitro* antimalarial activity. Their cytotoxicity is represented by *in vitro* rate of hemolysis. Intact erythrocytes were found to respond with a dose-time-integral and fitted to models of pseudo first order reaction, Michaelis-Menten equation and Hill equation. Hemolysis isotherms of flower, root and gum resin extracts were representative. Their antimalarial action may be due to the erythrocytic membrane instability as has been earlier reported with ethanol and Chloroquine.

5. Sharma, P. and Sharma, J.D. A compilation of antiamoebic plants and, *in vitro* activity with extracts of *Commiphora wightii* and *Calotropis procera* as compared with some standard antiprotozoal drugs, Phytotherapy Research, (Communicated).

Abstract- Often the same plant with traditional medicinal value is specified for symptomatic treatment in more than one disease. The scientific basis for such activities in amoebiasis is in screening for antiprotozoal effectiveness by various plant extracts from more than one plant and their purified compounds. In this study the gum oleo-resin of *Commiphora wightii* ethanolic extract (IC\textsubscript{50} 48.09μg/ml), Hexane fraction (IC\textsubscript{50} 10.08 μg/ml) and its purified compounds Guggulsterone-E (IC\textsubscript{50} 2.584μg/ml) and Cembrene-A (IC\textsubscript{50} 6.94μg/ml) are found to be slightly better than derivatives from *Calotropis procera*. The bud ethanol of *C. procera* (IC\textsubscript{50} 62.63μg/ml), its root chloroform (IC\textsubscript{50} 67.17μg/ml) and Calactin (IC\textsubscript{50} 27.41μg/ml) are ranked within its plant parts to be most effective. Antiamoebic drug Metronidazole (IC\textsubscript{50} 0.15μg/ml) is approx. 20 to 450 times more effective than these plant products. This comparable range of antiamoebic activity is significant in *in vitro* screening for such plants.


Abstract - The *in vitro* response of a CQ sensitive and a CQ resistant isolates of *Plasmodium falciparum* to a group of quinine derived and artemisinin derived standard drugs has been studied. The IC\textsubscript{50}s were derived from the log dose response curves and ranked in ascending order for the sensitive isolate MRC P.f. 20. Artemisinin, Artemether and Arteether are effective in a range of 0.00032-0.0054μg/ml for MRC P.f 20 and a range of 0.0047-0.026 for resistant isolate MRC P.f. 76. Quinine, Quinaldine, Quinacrine, Chloroquine, Halofantrine and Amodiaquine showed ranges of 0.0414-0.492μg/ml for MRC P.f 20 and 0.159-4.389μg/ml for MRC P.f 76.

The intra-group differences between the two classes of drugs was statistically studied by Analysis of Variance (p ≤0.05 and p ≤0.005) and further by Tukey's test (Q ≤0.01). The dose-responses of these two strains vary with these drugs with some overlap. Primaquine and Metronidazole show a significantly different response.