

Screening of ethnomedicinal plants of Chhindwara district used by the tribal and rural communities for antimalarial activity

VIKAS SHARMA SUDHAKAR RAO V., R.K. DIWAN,
R.C. SAXENA and P.N. SHRIVASTAVA

Pest Control & Ayurvedic Drug Research Laboratory, S. S. L. Jain P.G. College, Vidisha (India).

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ABSTRACT

The present study carried out in remote areas of Chhindwara district of M.P. India. Tribal communities of Chhindwara use commonly available plants for the treatment of malaria. The paper gives detail about 21 plants of 15 families. Data on botanical name, family local name and dosage are given. Antimalarial plants for Chhindwara district are enlisted for the first time.

Key words: Tribal, Antimalarial, Ethnomedicinal, herbal drug, Chhindwara district.

INTRODUCTION

Chhindwara district is situated at 1550 – 3820 feet above from the sea level. It is surrounded by Satpura plateau. Its geographical coordination is 21.28 – 22.49 deg. North (longitude) and 78.40 – 79.24 deg. East (latitude). It is tribal & backward district of M.P. Medical facilities are not so good here: even there is no primary health centre in many village & settlements. Malaria is common among all over district. It is caused by protozoan parasite *Plasmodium. P.falciparum* is most fatal for human beings. It causes millions of death annually. The Sousar & Pandhurna tahsil of Chhindwara district are the reserve bank for the malaria disease. But there are no great evidences of malaria caused death, because of use of herbal medicine.

The first antimalarial drug quinine was isolated from the bark of *Cinchona* species (Rubiaceae) in 1820. It is one of the oldest and most important antimalarial drug, that is still used today. In 1940 another antimalarial drug chloroquine was synthesized and until recently, this was only drug, used for the treatment of malaria. Unfortunately after

an early success, the malarial parasite specially *P.falciparum* became resistance of chloroquine. Treatment of chloroquine resistant malaria was done with alternative drugs or combinations, which were rather expensive and sometimes toxic. (Saxena *et. al* 2003). Drug resistant malaria has become a major problem in malaria control. Resistance to antimalarials has been reported in both *P.falciparum* and *P.vivax*. Drug resistance in *P.falciparum* is not confined to Chloroquine alone but also to the other currently used antimalarials like – Sulphadoxine – Pyrimethamine (SP), Quinine and Mefloquine. (Farooq *et. al*. 2004). Artemisinin and its derivatives are the newest and most effective antimalarial drugs. These drug affect the protein synthesis of the parasite. There has not been any solid evidence of artemisinin resistance reported from any part of the world. But recently a news published in "Dainik Bhaskar" Chhindwara edition dated on 5 Aug. 2009. and "Lokmat samachar" Nagpur edition dated on 5 Aug. 2009 with the title of "Be – asar hoti ja rahi Malarial ki dava", that indicates about the resistance of malarial parasite against artemisinin.

Table 1: Plant species being used in treatment of malaria by the tribal and rural communities of Chhindwara distt of M.P.

S.No	Name of the plant sp. & family	Local Name	Part used	Uses
1.	<i>Acacia nilotica</i> (L.) wild (Fabaceae).	Babul	Leaves	Decoction of leaves with Giloy bel is given twice a day for fever control.
2.	<i>Achyranthes aspera</i> L. (Amaranthaceae)	Lat – Zeera	Leaves & seeds	5g. Leaves & fruit powder is mixes with 1 g. black piper and 12 -15 small balls are prepared. It is given twice in a morning & evening up to 3 days.
3.	<i>Amaranthes polygamous</i> Linn. (Amaranthaceae)	Chaulai	Leaves	Leaf vegetable is served to the malaria patient.
4.	<i>Andrographis paniculata</i> (Burm f.) Nees, (Acanthaceae)	Kalmegh	Whole plant	25g. powder of plant is boiled with 200ml. water, when it remain about 40ml. filtered the extract and take orally twice a day 2 spoonful for 3 days.
5.	<i>Azadirachta indica</i> (L) A. Juss. (Meliaceae)	Neem	Roots	25g. fresh root bark is dipped in 200ml water for overnight & boiled it when it remains 40ml, filtered and taken orally twice a day up to 2 days.
6.	<i>Bryonopsis laciniosa</i> Linn. (Cucurbitaceae).	Shivlingee	Fruits	10-15 ripen fruits with 10g. kalmeth, 5g, kadu kand, 10g. tulshi leaves 5g. neem leaves & 5cm. long finger sized giloy bel mixed together and crushed. It is boiled with 1 litre water, when it remains 100ml. filtered the extract & give orally twice a day up to 3 days.
7.	<i>Caesalpinia bonduc</i> . (L). Roxb. (fabaceae)	Gataran	Leaves	2 or 3 new leaves and 2 black piper crushed properly with water. This paste is applied upon navel. It is helpful to reducing fever.
8.	<i>Calotropis gigantea</i> Br. (Asclepiadaceae)	Safed Aak	Branch	200ml cow milk is boiled and stirred with freshly cut branches. Till milk become thick like mava. Add some sugar and coconut powder. Doses of this mixture act as a precautionary agent for malaria. It will surely keep malaria away for about 3 years
9.	<i>Cannabis sativa</i> L. (Cannabinaceae)	Bhang	Leaves	Pure hemp powder 1 g. mixes with 'Gud' 2g. and prepare 4equal balls. Two balls are given one by one with 2hours intervals in the morning & evening.
10.	<i>Lawsonia inermis</i> L.	Mehndi	Flowers	10g. fresh flowers are boiled into 200ml of water &

11.	(Cannabinaceae) Nyctanthes arborescens L. (Nyctaginaceae)	Harsinghar	Root powder	filtered extract gives orally twice a day up to 3days. 50g. root powder boils in 500ml of water when it remains about 100ml filtered and take orally.
12.	Ocimum sanctum L. (Lamiaceae)	Tulsi	fruits	Leaf extract 10ml. & 1g. black piper powered mixed in 200ml. water and gives orally twice a day.
13.	Phyllanthus emblica L. (Euphorbiaceae)	Amal	Leaves & fruits	Pickle of the fruits is used to remove the bitterness of the mouth during malaria & other fever.
14.	Phyllanthus niruri Linn. (Euphorbiaceae)	Bhui – amal	Leaves & fruits	5g. leaves & fruit powder is mixed with 1g. black piper and 12-15 small balls are prepared. It is given twice a day up to 3days.
15.	Sesbania grandiflora (L) Pior. (fabaceae)	Augustia	Leaves	Leaf extract: 2-3 teaspoonful and half teaspoon full honey is given orally for reducing the fever.
16.	Solanum nigrum L. (Solanaceae).	Makoi	Leaves & fruits	Extracts of fresh leaves & ripened fruits is given orally twice a day to removal of fever.
17.	Syzygium cumini (L) Skeds (Myrtaceae)	Jamun	Bark & Seed powder	Extract of bark with, shivingeer fruit, giloy, kalmegh & tulsi is given orally to cure malaria.
18.	Tinospora cordifolia (Lour) Miers. (Manispermaceae)	Giloy	Stembar k	Extract of stem bark is given orally as precautionary & curative treatment for malaria, jaundice chicken gunea, bird flue, swine flue, cancer AIDS and many other fever.
19.	Trichosanthes cucumerina Linn. (Cucubitaceae)	Jangli	Fruits	2fruits are crushed with 5cm. long finger shaped giloy bel & boiled into 250ml of water when it remain about 50ml filtrate is given orally
20.	Withania somnifera (L) Dunal (Solanaceae)	Ashgandhi	Root	5g. root powder with 20g. finger shaped giloy bel are crushed and boiled into 250ml. of water when it remain 50ml. it is taken orally once a day in the morning up to 3days.
21.	Xanthium strumarium L. (Asteraceae)	Gokhru	Seeds	2Seeds are dipped in to water for overnight and then crushed properly filtered is given orally with mishri for the treatment of malaria.

For seeing the sensitivity of the matter and rapid enhancement of resistant in plasmodium, it has become necessary to search new herbal source for the control and treatment of malaria. In the present laboratory a lot of work on malaria control have been carried out by Saxena *et.al* (1989), Krishna *et. al.* (2008), Saxena *et. al* (1993) Some other ethnomedicinal work have been carried in same laboratory by saxena *et. al* (2001 & 2002), Koli *et. al* (2002) & Lone *et. al* (2008). In 2005, Singh mentioned the *Tinospora cordifolia* as an adjuvant drug in the treatment of hyper reactive malarious splenomegaly. In 2008 B.A. Iwalokum use the aqueous leaf extract of Vernonia amygdaline with chlriquinine in mice and observed that the antimalarial activity fo chloroquinine for both resistance and sensitive strain. Another is combination of *Andrographis paniculata* and *Hedyatis corymbosa* extract with *Curcumin* is recorded as a effective antimalarial herbal drug (Kirti *et. al* 2009).

Methodology

The authors conducted extensive field survey in different remote areas of district during 2008 – 2009. Ethnomedicinal informations were obtain from herbal medicine practioners, Vaidyas and old men & women of different tribal communities. The information recorded from one areas has been cross checked from another area. The specimens were collected in the guidance of tribal communities. Voucher specimens were identified with the help fo botanist, S.S.L.jain P.G. College Vidisha M.P. and deposited in herbarium of Pest Control and Ayurvedic Drug research laboratory, Vidisha M.P.

Enumeration

Information about antimalarial plants are presented in table 1. Plant species are arranged in alphabetical order along with the family, local name, part used and their uses.

RESULTS AND DISCUSSION

Ethnomedicine and ethnobotany based on folklore in India is not new as primary information

in our ayurvedic system have been used since time immemorial (Chopra *et at*). The present paper reports 21 plants of 15 families are used in the treatment of malaria among the rural and tribal community. Deepak Acharya (2002) & Babistale *et al.* (2007). Are the ethnobotanists, those suggest the herbal medicines for the treatment of various ailments. The study is quite new in the sense the antimalarial plants of Chhindwara district are enlisted first time.

During the study one most important overview came out that :Tribal use the plants having bitter taste for the treatment of malaria mostly and the alkaloids have bitter taste also. Oliveira *et at.* Mentioned the activity of alkaloids belonging to different structural classes as well as its importance as new antimalarial drug. They divided the alkaloids into 2 groups : the first group contains highly active compounds and having a complex structure, and the second group contains moderate to low activity having relatively simple structure.

There is no doubt, artemisinin & its semi synthetic derivatives are remarkable examples of diverse contribution of natural products to the development of effective antimalarial drugs. These drugs are particularly valuable for the treatment of chloroquinine resistance parasite. But low yield of artemisinin in plants, increasing demand and extremely difficult synthesis in laboratory has motivated scientist worldwide to investigate an economic alternative (Namdeo *et al.*). so we have to decide to organize a survey for the collection of primary data of antimalarial plants.

Looking to the sensitivity of the matter and successive enhancement of malarial parasite against available drugs, it should be organized a research on medicinal plants for the identification, evaluation & quantification of phytochemical agents to ensure the efficient and safe medicine at a low cost.

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