PHYTOCHEMICAL INVESTIGATION AND ANTIPLASMODIAL ACTIVITY OF LEAF EXTRACT OF *Cassia obtusifolia* Linn.

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SUMMARY

The methanol extract of fresh leaves of *Cassia obtusifolia* Linn. (Caesalpiniaceae) was investigated for its antiplasmodial activity against chloroquine-resistant strains of *Plasmodium faliciparum* (Malaria causing protozoan). *In vitro* activity against *P. falciparum* strain K-1 was assessed using the Parasite Lactate Dehydrogenase assay method. The main anti-plasmodial compound 1, 3, 8, trihydroxy-6 methyl-9, 10 anthracenedione has been isolated from *Cassia obtusifolia* Linn. leaves. Concentration of the compound in the leaf was 1.5%. The leaf extract was effective to check the incidence of disease about 80%.

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Cassia obtusifilia Linn. (Caesalpiniaceae) is commonly known as "Chakawar". It is widely distributed along road side and other fallow lands through out the India and the other tropical and temperature region of Asia, Africa and America. It's leaves are diuretic, anthelminitic, hepatoprotective, antiplasmodic, stomachic, useful in half headache, leprosy, snake bite, asthma, proriasis, hepatitis-B, stomach ulcers and in the treatment of malarial fever.

The antiulcer properties of the aqueous and methanol extracts of fresh leaf of *Cassia obtusifilia* Linn. have been reported by (Akah *et al*., 1984 and Nwafor and Okwuasaba, 2001). The present study was undertake to evaluate the antiplasmodial effects of the methanol extracts of fresh leaf of *C. obtusifolia* Linn. against *Plasmodium faliciparum*. This note describes the isolation and activities of 1, 3, 8-trihydroxy-6 methyl-9, 10, anthracenedione the major antimalarial principle of the plant.

MATERIALS AND METHODS

Plant Material:

The mature fresh leaves of *Casia obtusifolia* Linn. was collected from the rural areas of Jaunpur district (U. P.) and identified with the help of flora (Duthie, 1960).

Extraction and Isolation :

The dried powdered leaf of *Cassia obtusifilia* Linn. (100 gm) was exhaustively extracted with 90% methanol using Soxhlet apparatus. The extract was concentrated to a small volume in vacuo and this gave yield of 20-28% w/w. Analytical silica get 150 A (Whatman) 250 mm thick was activated at 80-100°C. The solvent system used was hexane ethylacetate (80-20 V/V). The crude methanol extract (4 ml) was made into a slurry with silica get (20 gm), dried in an oven and fractionated using Accelerated Gradient Chromatography (AGC) for gradient elution as follows : hexane, hexane ethyl acetate, ethyl acetate, ethyl acetate ethanol and methanol to complete elution. A total of 114 fractions were obtained after complete elution. Each fraction was examined using analytical Thin Layer Chromatography (TLC) and those fractions with similar spots were pooled together, resulting in 5 fractions coaded A, B, C, D and E. Compound C_1 recrystallizes out from the hexane : ethyl acetate (85 : 15V/V) portion, giving an orange amorphouspowder (50 mg). The UV, IR, MS, ^{1}H and ^{13}C-NMR Spectra of C_1 (Fig. 1) were in accordance with previously reported data of emodine isolated from some *Cassia* sp. (Lemli and Cuvelle, 1967 and Gritranapan *et al*., 1983).

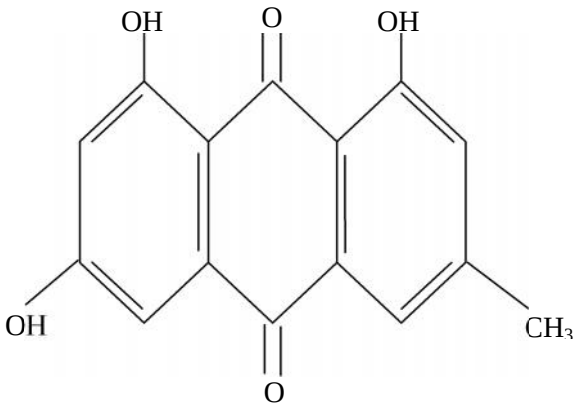

Fig. 1 : Compound C_1 : 1, 3, 8-trihydoxy-6 methyl 9, 10-anthracenedione (Emodin)