

Cissampelos pareira, Cissampelos mucronata (Menispermaceae)

Engl.: Velvet leaf, False pareira brava, French: Faux pareira brava, Paria brava

Mexico: Oreja deraton, Portugese: Abutna, Pareira brava

Hindi: Parhi Kashmiri: Zakhmi-hayat Sanskrit: Ambashtha

African vernacular names:

East Africa: Kinukadjio Suahili (Tansania): Kishiki cha buge

Schona (Zimbabwe): Ruzambu, mu checheni

The plant

There are 37 plant species summarized under this botanical name. Their taxonomic position is not clear. In most cases “Cissampelos pareira” or “Pareira” is used and the single species are called subspecies. All plants are widely distributed in the tropical and subtropical parts of Asia, America and Africa.

The plant is a climbing shrub, 2 - 5m high with a thickened root. Leaves have an orbicular shape 7 – 14 cm in diameter. They are membranous or leathery, veined, glabrous to densely pilose. Flowers are green, male ones in short umbels, 10 - 12cm long, females in pendulous spikes, 7 - 10cm long, with a little round leaflet at the base of every flower.

Everywhere these plants can be recognized by the orbicular or cutiform shape of their leaves (12). In Africa Cissampelos mucronata is one of the mostly used plants.

Plant parts used

The leaves, the roots, extracts of the roots

Constituents

From the **aerial parts** of C.pareira a chalcone a flavone dimer was isolated and was named cissampeloflavone. Its structure was identified by NMR and MS. (15). As known for plants of the family of Menispermaceae parts of them are toxic especially the **roots**. In earlier investigations **roots** from **Kashmere** contained 0.33 % of alkaloids, mainly hyatin and bebeerine, 0.2 % essential oils, 3.4 % fixed (fatty?) oils and a sterol (12). Furthermore from the **roots** of C.pareira the bisbenzoylisochinoline alkaloids hyatin, haytinin and haytidin were found. The main one is bebeerine. The alkaloids, isolated by preparative HPLC brought significant invitro effects against Plasmodium falciparum (4, 17). In the **roots** of C.pareira from **Peru** toxic bisbenzoylisochinoline alkaloids were investigated. One of them, cissampareine was isolated. Its chemical structure is C₃₇ H₃₈ N₂ O₆ (9). Comparing chemical structures hyatin seems to be the same one as bebeerine (6).

Out of the group of protoberberine alkaloids cissamine, a main quaternary alkaloid was found, too. Its chemical structure (as chloride) is C₂₀ H₂₄ O₄Cl (4). The chemical structures of two antileucemic alkaloids, areirubrine A and B, isolated from C. pareira were elucidated by 1HNMR. Both showed a tropisochinoline structure (10,11).

Traditional uses

In the traditional folk medicine the roots are used against a lot of ailments. They have a bitter taste and possess diuretic, purgative and antiperiodic properties. Furthermore they are judged to be good against dyspepsia, diarrhoea, dropsy, cough, urinary difficulties like cystitis, dysentery, asthma and heart diseases. Mainly extracts of the roots are used (12, 13). In the simplest cases leaves are good as an antiseptic against inflammation and can be put on wounds in order to heal sores (13).

In Assam, India is some discussion about family planning with *C. pareira*. It is applied together with other indigenous plants (16).

In a new report on screening African plants one can find the the simple instruction to treat malaria, fever, sexually transmitted diseases, snake bits and conjunctivitis, like that: "Boil the ground root in water about 10 minutes and drink the filtrate" (18).

Results of experimental studies

In many tests about biological activities of plants and their extracts *Cissampelos* plants were included and showed manifold activities. The ethanolic root extract of Nigerian *C. mucronata* containing alkaloids caused changes in the behavioural activity of mice and rats producing depression of the central nervous system. The extract progressively reduced ephedrine-induced spontaneous motor activity in rats, and prolonged pentobarbitone-sleeping time in mice. 40 percents of the mice pretreated with the extract were protected from pentylenetetrazole-induced convulsions (1).

Activity against parasites

Cissampeloflavone has a good activity against *Trypanosoma cruzi* and *T. brucei rhodiense*. Against human KB cell line it shows only a low toxicity (15).

Between 43 plants, recommended by traditional Tanzanian healers for curing malaria *C. mucronata* was very effective. The in vitro testing of different extracts (Ethanol, petrolether ethylacetate) revealed a strong antimalarial activity with IC50 values below 10 µg/ml (7).

Root extracts of *C. mucronata* plants collected in the Kivu district of the Democratic Republic of Congo showed a high activity against chloroquine-sensitive and chloroquine-resistant *Plasmodium falciparum* strains with IC50 values of 1.5 and 1.1 µg/ml. This extract significantly inhibited the enzyme tyrosinekinase P56, too (18).

Effects against ulcers

The methanolic extract of Nigerian *C. mucronata* leaves inhibited ulcers in rats caused by indometacin and stress. In mice the oral LD50 value was estimated to be 8.5 +/-0.35 (2).

Different fractions of a methanolic leaf extract of *C. mucronata* caused protection against ulcers induced by indometacin in rats at a dose of 450 mg/kg. This effect seems comparable with that of 100 mg/kg of cimetidine (14).

The ethanolic extract of *C. pareira* roots reduced diarrhoea in mice. 25 - 100mg /kg dry extract per os exhibited a dose dependant decrease of faecal droppings from 65 to 26 - 46. The inhibitory effect was greater on the concentration of sodium-ions (20 and 34.5 %) than on that of potassium-ions (6.7 and 9.4 %). At 25 mg/kg there was no effect on normal defecation of mice. 50 and 100 mg/kg inhibited defecation totally in the initial 2 hours. In the third hour the activity was reduced to 40 and 73 %, respectively (3).

Effects with snails

For controlling of *Lymnaea natalensis* and other snails investigations of 17 Nigerian plants were done with *C. mucronata*. The crude water extract of *C. mucronata* seemed to be useful in their controlling. The LC50 values were determined but not published values ($p = 0.050$) (17).

Results of clinical studies

There were no results available

Undesired effects and cautions

Though in Nigeria the roots of *C. pareira* are components of poisons for hunting and fishing there are no warnings from them. (13).

Generally accepted instructions for the use and dosage are not available.

Evaluation

Roots are the most used parts of *Cissampelos* plants . Mainly they contain alkaloids of different structures. All these, alone or together, are toxic.

But when used only for short terms in folk medicine and when extracted only by water there no sincere toxic effects could be found. The application seems to be harmless.

But subacute and chronic toxic effects cannot be excluded.

In higher concentrations the alkaloids of *Cissampelos* plants are used as poisons in hunting and fishing.

Because of the toxicity of all alkaloids in this plant -alone or all together- all uses of the roots and the whole plant must be advised again, except skin sores in short time treatment.

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leaves for sores of the skin	**
treatment of inner parts of the body	---

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