Egyptian Herbal Monograph

Volume 1

Wild Medicinal Plants

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Cleome droserifolia (Forssk.) Delile سموة

1. Names & Synonyms

***Cleome droserifolia* (Forssk.) Delile** (1, 2).

Family: Capparaceae (3).

Synonym: *Roridula droserifolia* Forssk. (1-3).

Arabic: Samwa سموة (3).

English: Cleome (1)

2. Geographical distribution

Uweinat oasis, all the deserts of the country including that of Sinai, Red Sea coastal strip, Gebel Elba and the surrounding mountainous region (3).

3. Part used for medicinal purposes

Herbs (3).

4. Major chemical constituents

- **Flavonoids:** Quercetin, kaempferol, and isorhamnetin, flavonol glycosides, flavones (methoxylated flavones and flavone glycosides) (4-10).

- **Terpenes:** Sesquiterpenes, diterpenes and triterpenes (11- 14).

- **Essential oil:** Aerial parts main constituents of *C. droserifolia* oil are (E)-3,7, 11-trimethyl-1,6,10-decatrien, carotol, *δ*-cadinene, *β*-eudesmol, and benzyl isothiocyanate (15, 16).

- **Others:** Saponins, coumarins, alkaloids, sterols and docosanoic acid (1, 3, 10, 17).

5. Traditional medicinal uses (18)

A. Treatment of hyperglycemia.
B. Accelerate wound healing especially for *diabetes mellitus* patients.
C. Open sores and cuts.
D. Allergy, dermatitis, inflammation, scabies, as antimicrobial agent and antibiotic for wounds and burns.

E. Bee stings.

***C. droserifolia* is a traditional medicinal plant for use in the specified indications exclusively based upon long-standing use.**

6. Herbal preparations correlated to medicinal use (18)

A. **1.** Decoction: Half of a teaspoonful of the air-dried leaves powder is added to a cup of water, boiled, and taken in the morning before breakfast (North eastern desert, red sea coast area and north Sinai).

2. Powder (Halaib triangle area).

B. **1.** Paste, Infusion or powder of Leaves and Shoot.

2. The leaves powder is oven dried and added on wounds as powder.

C. Grind leaves, boil them in milk butter, strain, cool and apply to wound.

D. **1.** Decoction of boiled leaves.

2. Infusion.

E. **1.** Add the ground leaves in cold water.

2. Infusion: Add the ground leaves in warm water.

7. Posology and method of administration correlated to medicinal use (18)

A. Orally

1. Drinking the extract of boiled leaves in water in the morning before breakfast (North eastern desert and red sea coast area, north Sinai).

2. A dose of 5g of powder is taken before meal (Halaib triangle area).

B. Topically

C. Topically

D. **1- Orally:** Drinking the decoction.
2- Topically: Washing of body with the infusion.

E. **1- Orally:** Add the ground leaves in cold water and drink (0.5 glass).
2- Topically: Wash the sting with the leaves' infusion.

8. Contraindications

Hypersensitivity to active substances and to other plants of the same family.

9. Special warnings and precautions for use

- If the symptoms worsen during the use of the medicinal product, a doctor or a pharmacist should be consulted.
- The plant is very toxic if given intraperitoneally (1, 3).
- Monitoring of blood glucose level should be done regularly.

10. Interactions with other medicinal products and other forms of interaction

None reported.

11. Fertility, pregnancy and lactation

-Safety during pregnancy and lactation has not been established. In the absence of sufficient data, the use during pregnancy and lactation is not recommended.

-No fertility data available.

12. Effects on ability to drive and use machines

No studies on the effect on the ability to drive and use machines have been performed.

13. Undesirable effects

- None known.
- If adverse reactions occur, a doctor or a pharmacist should be consulted.

14. Overdose

No case of overdose has been reported.

15. Relevant biological activities

- The antidiabetic activities of the aqueous and ethanolic extracts of *C. droserifolia* (Forssk.) Del., were tested in cultured C2C12 skeletal muscle cells and 3T3-L1 adipocytes. The chloroform and ethyl acetate fractions of *C. droserifolia* aqueous extract were found to have significant insulin-like effects in peripheral tissues, namely the stimulation of basal glucose uptake in skeletal muscle cells and glitazone-like enhancement of adipogenesis (19).
- The evaluation of the possible protective effects of *C. droserifolia* methanolic extract (CDE) against pancreas *β*-cells' damage and antioxidant defense systems in alloxan induced diabetic rats was studied. The increase in blood glucose and MDA levels

with the decrease in GSH content and in enzymatic activities were the salient features observed in diabetic rats. Administration of CDE (0.31g/kg bw/day, orally) for 30 days caused a significant reduction in blood glucose and MDA levels in alloxan treated rats when compared with diabetic rats. Furthermore, diabetic rats treated with CDE showed a significant increase in the activities of both enzymatic and non-enzymatic antioxidants when compared to those of diabetic rats. Degenerative changes of pancreatic *β*-cells in alloxan treated rats were minimized to near normal morphology by administration of CDE as evidenced by histopathological examination. Results clearly indicated that *C. droserifolia* treatment exerts a therapeutic protective nature in diabetes by decreasing oxidative stress and pancreatic *β*-cells' damage which may be attributed to its antioxidative potential (10, 20).

- Investigation of the antidiabetic as well as the effect on lipid peroxidation of three different doses (50, 100, and 200 mg/kg) of *C. droserifolia* aerial parts methanolic extract in comparison with glibenclamide in alloxan-induced diabetic rats was done. Oral administration of 100 and 200mg/kg of the methanolic extract for 3 weeks significantly *(P < 0.05)* restored the blood glucose level, plasma malondialdehyde and urine sugar to near the physiological values whereas the effect of 50mg/kg was not significant (21).
- The antibacterial activities of essential oil from *C. droserifolia* were investigated against a selection of Gram-positive and Gram-negative bacteria by the agar-well diffusion and the micro-dilution methods. The study showed that the oil exerted marked growth inhibitory effects. Most bacterial species tested were suppressed, despite the varying degrees of inhibition observed (15).
- The aerial parts of the *C. droserifolia* shrub had strong antioxidant, antimicrobial and immunomodulatory activities, which can improve the overall health status and seem to be related to its impressive range of biologically active phenolic compounds (22).

16. Additional information:

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17. Date of compilation/last revision

06/08/2022.

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