

NOTE

Phytochemical Investigation of Medicinal Plants *Cnicus wallichii* and *Cnicus benedictus* L.

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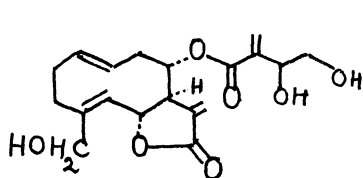
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In the present work, the phytochemical studies of *Cnicus wallichii* and *Cnicus benedictus* L. have been studied.

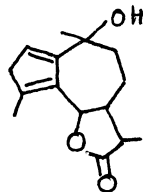
Family Compositae elaborates a variety of natural products particularly sesquiterpene lactones, many of which elicit interesting biological activities. The genus *Cnicus*, which belongs to this family, has been used for its emetic, tonic, diaphoretic and antibiotic effects on the gastric functions in Indian system of medicine. As no thorough phytochemical work has been done on these species, it is intended to make a detailed investigation on the chemical constituents of this product and allied species and to subject them to pharmacological screening.

For a study of the biological activity of the compounds isolated from these plants, it was considered worthwhile to investigate the plants.

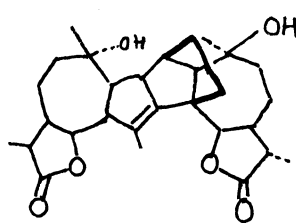
The plant *Cnicus wallichii* (family Compositae) which is used as emetic, tonic, diaphoretic and antibiotic etc., was collected from Faizabad district (U.P.) in the



Cnicin



Artabsin



Absanthin

Sesquiterpenes (Plants: *Cnicus wallichii* and *Cnicus benedictus* L.)

month of May, was dried, powdered and extracted successively with petroleum-ether (60–80°C) and MeOH in a soxhlet extractor. Solvents were removed by distillation in a water-bath. The pet-ether extract was chromatographed over silica gel eluting with different solvents and their mixtures of increasing polarity. Eluants from pet-ether-C₆H₆ (1:5) were mixed according to TLC pattern. It was crystallised from pet.-ether (60–80°C), which gave a colourless compound A, m.p. 79–80°C.

Eluants from pet-ether-C₆H₆ (5:6) furnished a compound, m.p. 135–136°C. It

was characterised as β -sitosterol by direct comparison (m.p., Co-TLC and superimposable IR) with authentic sample. Eluants from C_6H_6 were pulled according to TLC pattern and mixed together. Crystallisation from MeOH furnished another compound, as colourless needles, m.p. 175–76°C, that gave pink colour with Liebermann Burchard reagent.

Cnicus benedictus L. (Asteraceae) is an annual branched woody plant, florets yellow, once much used as *febrifuge*. Mr. Burnett said its properties have been superseded by other not more efficacious remedies. It has Germacran type bitter principles (ca. 0.25%) with *Cnicin* (an unsaturated sesquiterpene dihydro lactone) and *Artemisiifolin* (a sesquiterpene lactone), *Absinthin* (Ca. 0.2%) and its isomer *Anabsinthin*.

Artabsin can be detected only in freshly harvested plants.

In UV-365 nm *Cnicin* shows yellow-green fluorescence ($R_f = ca. 0.05$). In solvent system acetone-chloroform (30:40) *Cnicin* migrates at R_f Ca. 0.4. Liebermann-Burchard reagent (LB) and Vanillin-Sulphuric (VS) reagent. LB reagent—5 mL acetic anhydride and 5 mL conc. H_2SO_4 is added carefully to 50 mL absolute ethanol, while cooling in ice. The reagent must be freshly prepared.

The sprayed TLC plate is warmed at 100°C for 5–10 min, then inspected in UV 365 nm.

VS reagent : 5% Ethanolic H_2SO_4 , 1% ethanolic vanillin. The TLC plate is sprayed vigorously with 10 mL solution, followed immediately by 5–10 mL solution. After heating at 110°C for 5–10 min. under observation, the plate is evaluated in vis. It is used for detection of components of essential oils.

Absinthii herba L.B. reagent reveals two main zones with intense ochre fluorescence in UV-365 ml (*absinthin/anabsinthin* R_f 0.3–0.4), together with at least ten other mainly blue or green fluorescent zones. It appears as dark blue and violet zones respectively.

Treatment with 50% sulphuric acid also produces ochra fluorescent zones (in UV-365 nm) of *absinthin* and *anabsinthin*. The compound compares with authentic samples. These natural medicinal plants' active principles may be isolated and pharmacologically tested on rabbits and mice.

ACKNOWLEDGEMENTS

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