BULL. BOT. SURV. INDIA
Vol. 5, Nos. 3 & 4 : p. 269, 1963

TRITERPENOIDS III: LUPEOL FROM *SAMANEA SAMAN* (JACQ.) MERR.

P. C. MAITI

Plant Chemist, Botanical Survey of India, Calcutta

ABSTRACT

Lupeol has been isolated in 0.07% yield in the non-saponifiable fraction of the pericarp-mesocarp portion of the pods of *Samanea saman* (Jacq.) Merr.

Samanea saman (Jacq.) Merr. commonly known as rain tree belongs to the family *Leguminosae*. It bears profuse quantity of pods amounting to 40-50 maunds yearly and has a long life. The pods have no commercial value and as no thorough chemical examination has so far been made it was thought worth investigating the active constituents of the pods and exploring any possible utilisation of them which are otherwise a waste.

The mature pods were collected during March-April and while some moisture was still left the seeds were separated from the pericarp and mesocarp. The ratio of the dried seeds and pericarp-mesocarp on weight basis was 1:4. Both were examined separately.

SYSTEMATIC SOLVENT EXTRACTION

The following fractions were obtained from exhaustive extraction of the air-dried powdered material with different solvents in succession in a Soxhlet apparatus.

	Petroleum ether (b.p. 60-80) (%) yield	Chloroform (%) yield	Ethyl alcohol (%) yield
Samanea saman (Seeds)	5.50	0.75	2.76
Samanea saman (Pericarp-mesocarp)	1.52	0.54	5.53

Examination of different fractions—Petroleum ether fraction of both and the alcoholic fraction of the pericarp-mesocarp responded strongly to Liebermann-Burchard reagent. Tests for alkaloids were feeble for the alcoholic fraction of the seeds but were fair for the same from the pericarp-mesocarp. The alcoholic fraction of the pericarp-mesocarp produced a heavy stable froth on shaking with water which persisted even on boiling.

STUDY ON THE PETROLEUM ETHER FRACTION OF THE PERICARP-MESOCARP

1300 g. of powdered air-dried pericarp-mesocarp was extracted with petroleum ether (b.p. 60-80). The solvent was distilled off and the whole mass was dissolved in one litre of ether. The ether solution was repeatedly extracted with 1% sodium hydroxide, the alkaline layer acidified and extracted with ether. Both the ether fractions were washed with water, dried over anhydrous sodium sulphate and freed from the solvent. The neutral fraction was 1.32% and acid fraction 0.2% on the dry weight basis of the pericarp-mesocarp.

Treatment of the neutral fraction: The viscous greenish yellow material (17 g.) was dissolved in 30 c.c. benzene and chromatographed over a column (16″×2″) of alumina. Three fractions were obtained in different eluents.

Fraction 1	... viscous orange oil	... in petroleum ether.
Fraction 2	... crystalline material m.p.186-92° (compound I ; 900 mg.)	... in 5:2 petroleum ether-benzene.
Fraction 3	... white solid m.p. 245-58° (compound II ; 100 mg.)	... in chloroform.

Fraction 1:4 On repeated crystallisation from methyl alcohol a colourless waxy solid separated, m.p. 78° (200 mg.). It did not respond to Liebermann-Burchard reagent.

Compound I: On repeated crystallisations from methyl alcohol it separated in fine needles, m.p. 209-10°. This gave pink colour with Liebermann-Burchard reagent and a distinct yellow colour with tetranitro-methane.

Benzoate of Compound I: 0.2 g. of compound I was heated on waterbath with 2 c.c. pyridine and 2 c.c. benzoyl chloride for one hour. The product was poured on ice water and filtered. The crude benzoate on three crystallisations from acetone gave fine needles, m.p. 259-61°. From the nature of the compound I and its benzoate it appeared to be identical with lupeol. The mixed m.p. of compound I with an authentic sample of lupeol was found to remain undepressed. The compound I was identified as lupeol.

Compound II: It crystallised from Chloroform-methyl alcohol mixture m.p. 165-66°. It gave a deep green colour changing to blue with Liebermann-Burchard reagent and a distinct yellow colour with tetranitro-methane. Attempts are being made to procure this compound in quantity to facilitate its characterisation.

ACKNOWLEDGMENT

The author expresses his sincere thanks to the Director, Botanical Survey of India, for his kind interest and encouragement and to Mrs. A. Chatterjee, Professor of Chemistry, University College of Science & Technology, Calcutta for a gift of an authentic sample of lupeol.