



CHEMICAL INVESTIGATION OF *TERMINALIA BELLIRICA*

SNEH SHARMA*

Department of Chemistry Govt. P.G. College, DAUSA (Raj.) INDIA

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ABSTRACT

Terminalia bellirica (Baheda) family combretaceae is distributed equally between tropical Asia, Africa and America¹. Traditionally, fruits of the plant are useful in bronchitis, sore throat and inflammation of eyes. A large number of compounds² have been isolated from fruits, stem bark of the plant. In the present communication, chemical investigation of seeds has been taken up. Friedelin, β -sitosterol have been isolated from petroleum ether extract, whereas D-glucose, fructose, sucrose, galactose and mannose were identified from ethanolic extract of seeds.

Key words: *Terminalia bellirica*, Friedelin, β -sitosterol.

INTRODUCTION

The plant *terminalia bellirica* belongs to family combretaceae is distributed equally between tropical Asia, Africa and America. Bark of this plant is endowed with diuretic and cardiogenic properties. Fruits are pungent, digestible, anthelmintic useful in bronchitis, sore throat and inflammation of eyes. Seeds contain protein and oxalic acid while bark contains tannin.

Many papers have reported analysis of different parts of this plant³⁻⁶. In the present communication, isolation and characterization of Friedelin, β -sitosterol from petroleum ether extract of seeds have been reported. Identification of compounds has been done by colour reactions, mixed m.p. and spectral data. Fruits of *terminalia bellirica* commonly called belliric myribalon, afford a yellow fixed oil which is used by poorer classes of Central Province as a substitute for ghee and are also used in treatment of rheumatism.

EXPERIMENTAL

Seeds of *terminalia bellirica* were collected from forests of Kota and Chittorgarh divisions of Rajasthan and were identified with the help of RUBL, Herbarium. Air dried and coarsely powdered seeds were extracted with petroleum ether 60-80°C on a boiling water bath for 3 x 12 hours. The brownish extract, thus obtained was concentrated to dryness and was chromatographed over Brockmann neutral alumina. Elution was done by petroleum-ether-benzene mixture in varying proportion. Various fractions were collected and each fraction was further purified by preparative TLC using Kiesel gel PF₂₅₄, (Merck) plates.

Seeds of *terminalia bellirica* afforded following compounds

β -Sitosterol

Elution of column with petroleum-ether-benzene (3 : 1) afforded yellow solid (150 mg), with methanol-chloroform (1 : 1) mixture, m.p. 136-37⁰C. It was identified as β -Sitosterol⁷ on comparison with an authentic sample.

Friedelin

This fraction was obtained by eluting column with benzene (3 : 1) Orange yellow solid (100 mg) was obtained which on crystallisation from benzene-petroleum (1 : 1) mixture as white crystalline needles m.p. 258-60⁰C. It tested positively for triterpenes. It answered Liebermann Burchard and Noller-tests. C₃₀H₅₀O (M⁺ 426), ν_{\max} (KBr) 2950-2885 cm⁻¹ (C-H Stretch), 1720 cm⁻¹ (C = O), ¹H NMR (CDCl₃) δ 0.73 (3H-s)⁸.

For Sugars

Seeds were extracted with ethanol for 12 hours and brownish extract was concentrated to syrupy mass under vacuum. It gave positive Molisch tests for sugars. It was examined for free sugars by ascending paper chromatography on Whatmann no. 1 filter paper using n-butanol acetic acid water (4 : 1 : 5) as organic phase and aniline hydrogen phthalate as spray reagent. After spraying and keeping chromatogram at 105⁰C for 10 minutes in oven D-glucose, fructose, sucrose, galactose and mannose were identified by co-chromatography with authentic sample.

RESULTS AND DISCUSSION

Plants have always been rich source of compounds. These complex compounds are associated with variety of biological activity like antifungal, antibacterial, anti-microbial etc. Isolation of friedelin justified analgesic and antipyretic activity of plant. The use of these compounds as herbal medicines needs further investigation. Thus nature has provided a complete store house of remedies to cure ailment of mankind.

REFERENCES

1. B. N. Sastri, The Wealth of India, Raw Materials, **Vol. X**, 1570 (1952).
2. R. Valsraj, P. Pushpangdam, U. W. Smith, J. of Natural Products, **60(7)**, 739-742 (1997).
3. C. Rukmini, J. of American Oil Chemist Society, **63(3)**, 360-363 (1986).
4. A. K. Gilani and A. Khan, J. Ethanopharmacology, 528-538 (2008).
5. A. Kar and B. K. Chaudhary, J. Ethanopharmacology, **84**, 105-108 (2003).
6. M. Bajpai, A. Pandey, S. K. Tiwari and D. Prakash, Int. J. Food Sci. Nutrition, **56(4)**, 207-291 (2005).
7. K. Pinamai, Chaundarthnabhorn, C. Naga Mkitedachakul, N. Soonthorn, Chreoin and W. Hahnjajanawang, J. Gastroentriology, **14(10)**, 1491-1497 (2008).
8. D. R. Gupta and S. K. Garg, J. Indian Chem. Soc., **45**, 250 (1968).