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Phytochemical Investigation, Isolation and Characterization of Betulin from Bark of *Betula Utilis*

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Betula utilis is a hardy perennial plant of moderate size up to 20 M in height, forming the upper limit of forest vegetation. It inhabitates along the Himalayan range from Bhutan westwards, ascending to an altitude of 4200 M. The bark of *Betula utilis* contains sitosterol, betulin, betulic acid, oleanolic acid, acetyloleanolic acid, lupeol, lupenone, methyl betulonate, methyl betulate and a new triterpenoid karachic acid. The ethanolic extract of powdered drug of *Betula utilis* was prepared. Most of the constituents were found to be present in the ethanolic extract. Thus it was concluded that constituents of *Betula utilis* bark are more soluble in polar solvents. The ethanolic extract showed the presence of alkaloids, carbohydrates, flavonoids, saponins and triterpenes. After identification of crude extract, the main work was to isolate the desired compound (betulin). So, fractionation of ethanolic extract was done by suspending it in water and then extracted it with n-hexane and dichloromethane. Betulin was isolated from dichloromethane fraction using column chromatography. Ethyl acetate and n-hexane in various ratios (1:10; 1:5; 1:3; 1:2) was used as eluent for separation of desired compound from the dichloromethane fraction. After isolation of desired compound, it was subjected to characterization. For characterization studies; melting range, TLC and spectroscopic techniques (UV, IR, Mass and NMR) were utilized.

Keyword: Altitude, Betulin, Ethanolic extract, Column chromatography, TLC, Isolation

1. Introduction

Betula utilis is a hardy perennial plant of moderate size up to 20 M in height, forming the upper limit of forest vegetation. It inhabitates along the Himalayan ranges from Bhutan westwards, ascending to an altitude of 4200 M.

The bark of *Betula utilis* contains sitosterol, betulin, betulic acid, oleanolic acid, acetyloleanolic acid, lupeol, lupenone, methyl betulonate, methyl betulate and a new triterpenoid karachic acid^[1,2]. Leucocyanidin and polymeric leucoanthocyanidins are also present in this plant.

Scientific Classification

Kingdom : Plantae
Phylum : Tracheophyta
Class : Magnoliopsida
Order : Corylales
Family : Betulaceae
Genus : *Betula*
Species : *utilis*

