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Phytochemical screening of hexane soluble fraction of *Pyrus pashia* fruits

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ABSTRACT

Pyrus pashia fruits are extracted with alcohol and its hexane soluble portion screened for bioactive constituents.

Keywords: Pyrus fruits**,** hexane soluble fraction, column chromatography, triterpenoids, steroids.

INTRODUCTION

The Pyrus pashia, commonly known as wild pear belongs to family, Rosaceae[1]. Its ripe fruits contain total solids 25%, proteins 1.1%, and ascorbic acid 3.2mg/100gm. As the fruit ripen, the starch is converted into sugars and at full maturity; they contain 3.3% of sugars[2]. Ripe fruits are eaten in case of acidity and indigestion[3]. The fruits are found to possess sugars, protein, ascorbic acid and elements like sodium, calcium, magnesium etc[4].

The crude extract of fruits of this plant was found to be active in leishmaniasis in CDRI so study is undertaken for isolation of those bioactive compounds.

Phytochemical screeining

The dried fine powder of fruits (2kg) was percolated with alcohol95%. The alcoholic extract was subjected to distillation to remove alcohol and then treated with hexane and water system. The hexane soluble extract (15gm) was subjected to column chromatography. It was eluted with hexane and increasing % of ethyl acetate. The column chromatography yielded three compounds.

Compound 1

m.p.215°C, molecular formula $C_{30}H_{50}O$, R_f 0.5(methanol: chloroform). The IR spectrum shows peak at 2926 cm^{-1} for CH_3 and CH_2, CO stretching at 1037cm^{-1}. The FAB-MS revealed a $[M-H]^+$ peak at m/z corresponding to molecular formula and [M-H2O] at m/z 409. The $_1$H-NMR spectrum of the compound gave signal at δ3.16 (1H,m) of carbinol proton and seven methyl signals at δ1.67, 1.03, 0.96, 0.94, 0.84,0.78.0.76(3H each, s). Further more two vinylic protons signals appeared at δ4.68 and 4.56(1H each, brs), suggesting the compound to be triterpenoid with lupine skeleton. Finally it was identified as lupeol by co-TLC and comparison of its physicochemical data reported in literature.

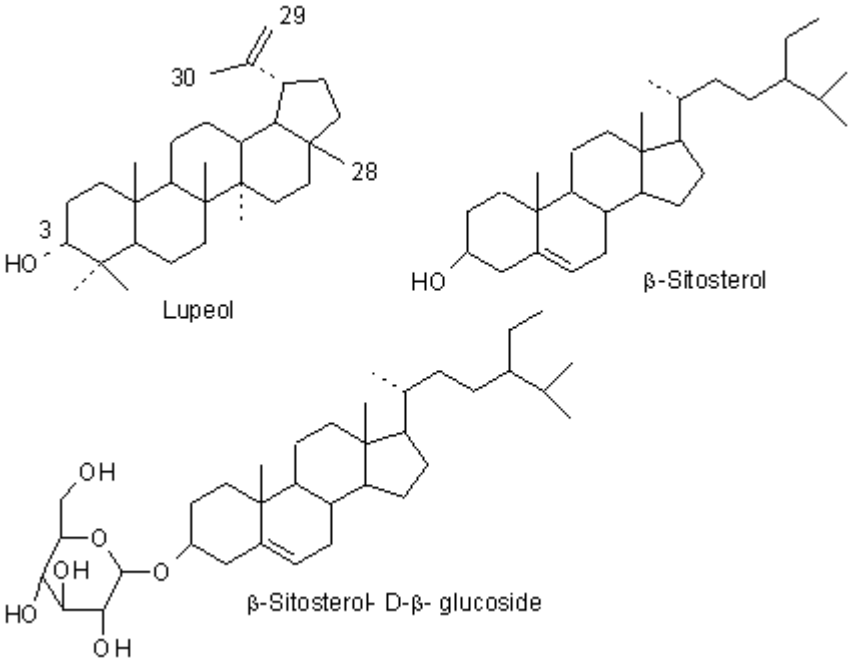
Compound 2

m.p. 138-139°C. It gave positive Lieberman-Burchard test for steroid. The IR spectrum revealed the presence of hydroxyl group at 3432cm^{-1} and a double bond at 1593cm^{-1}. Its FAB-MS showed $\{M + H]^+$ peak at m/z 415 corresponding to molecular formula $C_{29}H_{50}O$ in addition to important peaks at m/z 399, 396, 273, 255, 138, and 135. The ^{1}H-NMR spectrum displayed two tertiary methyl signals at δ1.0 and 0.88(3H each, s), three

secondary methyl at 0.92(3H, d, J=6.4Hz) and 0.67(6H, d, J=3.6Hz) and one methyl at δ0.84 (3H, m). The multiplets appearing at δ5.36 (1H, m) was assigned to olefinic protons. Presence of a carbinol group was evident from signal at δ3.26 (1H, m). On the basis of these spectroscopic evidences, the structure of compound 2 was established as β-sitosterol which was further confirmed by co-TLC

Compound 3

m.p. 290°C. It gave positive Lieberman-Burchard test for steroid. he IR spectrum revealed the presence of hydroxyl group at 3407cm^{-1} and a double bond at 1596cm^{-1}. The C-O stretching for alcohol at 1070 and 1023cm^{-1}, C-H stretching at 2934 cm^{-1} and C-H bending at 1361 and 1462 cm^{-1}.Its FAB-MS showed {M + H]$^{+}$ peak at m/z 577 and [M + 23]+ at 599 corresponding to molecular formula $C_{35}H_{60}O_6$. The ^{1}H-NMR spectrum displayed two tertiary methyl signals at δ0.98 and 0.88(3H each, s), three secondary methyl at 0.91(3H, d, J=6.0Hz) and 0.67(6H, d, J=5.2Hz) and one primary methyl at δ0.86 (3H, m). The multiplets appearing at δ5.36 (1H, m) was assigned to olefinic protons. The proton at C-3 appears at δ2.73 (1H, m). All the C-H of the glucose ring appeared in region of δ4.01 to 4.63. On the basis of these spectroscopic evidences, the structure of compound 3 was established as b-sitosterol –β-D glucoside.



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