



New D-glucopyranosyl -6- α -4'- methoxy Rhamnopyranoside from *Cyathula tomentosa*

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ABSTRACT

From ethanolic extract of *Cyathula tomentosa* plant new D-glucopyranosyl -6- α -4'- methoxy rhamnopyranoside has been isolated and characterized with help of FAB mass, ¹H, ¹³C NMR, HMQC & delete 6 reference and extra 4 in sequence of references.

Key words: *Cyathula tomentosa*, D-glucopyranosyl -6- α -4'- methoxy rhamnopyranoside, 5,7-dihydroxy.

INTRODUCTION

Cyathula tomentosa (Kurru) belongs to family Amaranthaceae, is a perennial under shrub occurs throughout Garhwal Himalayas up to 600-2000 meter altitude, *Cyathula tomentosa* has been used in snake bite and has emetic properties¹⁻². From *Cyathula capitata* and *Cyathula officinal* ecdyson content as 0.046% and 0.057% isolated respectively³ and *Cyathula prostrata* show antifungal free radical scavenging activities 2,2-diphenyl-1-picryl hydrazyl [DPPH] radical⁴. The chemical examnants at the basis of⁵ has been reviewed. From ethanolic extract of *cyathula tomentosa* a new Disaccharide has isolated. The structure of compounds have been elucidated through. mass, ¹H, ¹³C NMR and HMQC spectra.

EXPERIMENTAL

General

¹H-NMR at (400 MHz), ¹³C-NMR at (75 MHz) TMS as internal standard, using DMSO as solvent column chromatography was carried out on silica-gel 60-120 mesh (Merck). TLC was performed on percolated silica-gel. The eluting solvent was CHCl₃-MeOH spots were visualized by 7% H₂SO₄ followed by heating.

Plant material

The whole plant of *Cyathula tomentosa* was collected from Bacchehar District. Chamoli Utrakkhand in the month of October and identified by Department Botany, P.G. College Gopeshwar where voucher specimen was deposited.

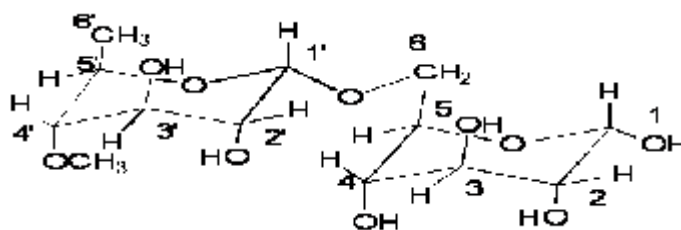
Extraction and isolation

The air dried whole plant (3kg) was exhaustively extracted with 95% aqueous ethanol at 30-50°C (for 48 hours) on a heating mantle. The ethanol extract was concentrated to dryness under reduced pressure to yield a black brown residue (200g) and then adding to the top of the column prepared using 500g silica gel (60-120 mesh; Merch, Mumbai, India) in chloroform. The dry ethanolic extract was chromatographic over silica-gel using Methanol:Chloroform elution solvent at (30:70) afforded a new disacchride.

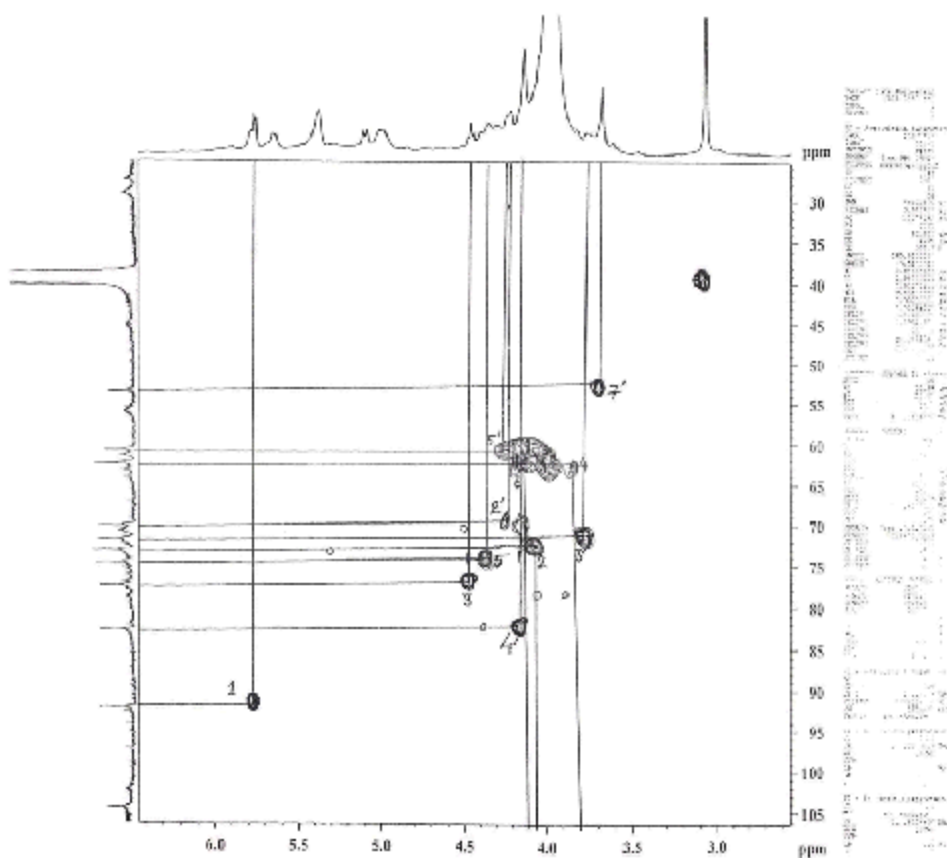
RESULTS AND DISCUSSION

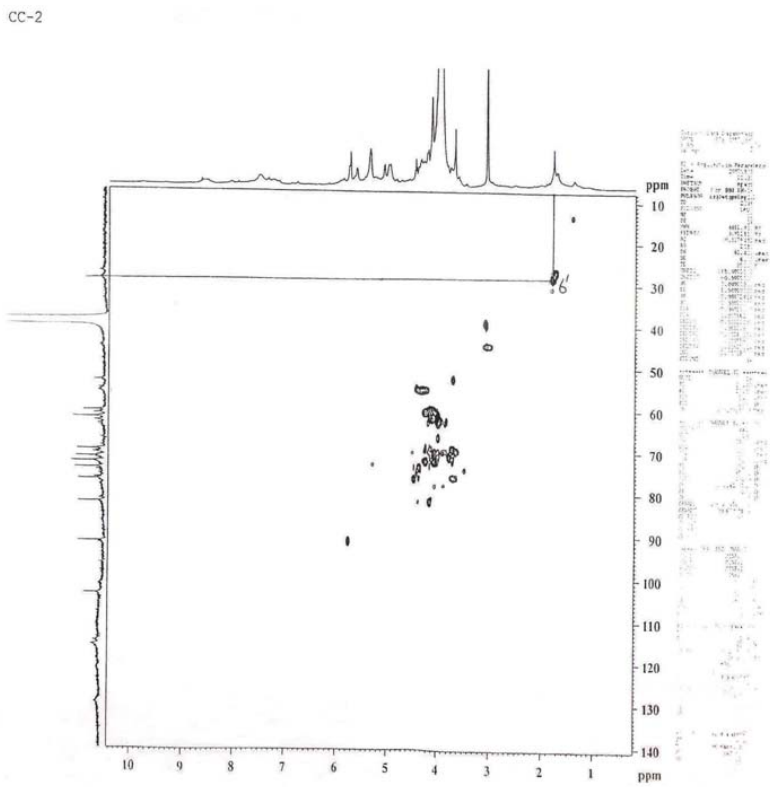
Compound was crystallized from methanol as colorless crystalline solid. On the basis of elemental analysis the molecular formula deduced as $C_{13}O_{10}H_{24}$. The molecular weight of the compound as shown from its FAB-MS is 356 amu, as the spectra was giving molecular ion peak at m/z 357 and fragment peaks 136, 180, 192 etc.

The ^{13}C -NMR Spectrum of the compound showed the presence of 13 carbons signals; six



Scheme 1: Structure of compound





peaks at δ 91.78, 77.13, 72.9, 62.13, 74.87, 62.14 were correlated with D-glucopyranoside and six peaks at δ 104.07, 69.89, 71.67, 82.57, 60.5, 29.0 for δ - rhamnopyranoside and one peak at δ 52.5 for methoxy group attached at C-4' which appeared on the downfield from the normal value. These value were again confirmed by ^1H NMR spectra the presence of singlet at δ 5.78 indicated anomeric signal and doublet at δ 4.13 [$J=2.3\text{Hz}$] for H-2 with other multiple peaks at δ 4.59, 3.7, 4.54, 4.1 for H-3, 4, 5, 6 respectively for D-glucopyranoside and singlet at 5.47 for anomeric proton of δ -rhamnopyranoside doublet at δ 4.2 ($J=9.2\text{Hz}$) for H-2' and other multiple peak at δ 3.76, 4.32, 4.40, for H-3', 4', 5' and singlet at 1.86 for H-6' or methyl group of ramoside and one singlet at 3.59 for methoxy group and singlet at δ 5.75, 5.1, 5.2 for OH groups

also δ -configuration further confirmed by acidic hydrolysis (7%MeOH-HCl, 10ml, 60to80°C, 8hr) furnished 4'-methoxy rhamnose and D-glucose confirmed by Rf values(PC) and co-TLC by direct comparison of authentic sample. These peaks values further confirmed by HMQC as in following spectra.

The characterized compound was again compared with the spectral data of the closely related compound as appeared in the literature⁶ and it was identified as D glucopyranosyl -6- α -4'methoxy rhamnopyranoside.

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