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Research Paper Chemistry

Hepatoprotective Activity of Dombeya Mastersii

Dr. V. Elango	Department of Sidhdha Medicine, Tamil Universiry, Thanjavur
Dr. V. Devanatha Santhosh	Department of Periodontics, Ragas Dental College, 2/102, Uthandi, Chennai-600 119
Dr. D. Sukumar	Department of Chemistry, Bharathiar College of Engineering and Technology, Karaikal-609 609

ABSTRACT

Creamy white, silkly – smelling fresh flowers of Dombeya mastersii of Sterculiaceae, was found to contain quercimeritrin, a flavonol glycoside. The structure of the yellow pigment was characterized by modern physical methods like UV, H-1 nmr, C-13 nmr, chemical reactions, chromatographic techniques and hydrolytic studies. The CCl4 induced hepatoprotective studies showed that the isolated flavonoid is found to be having ample activity.

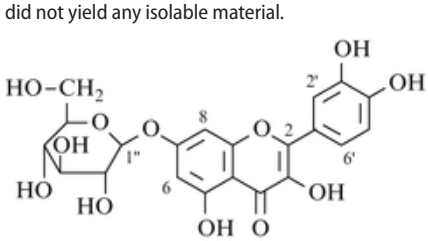
KEYWORDS : Dombeya mastersii , Sterculiaceae, quercimeritrin, necrosis, and hepatitis

Introduction

Dombeya mastersii. This species is an open evergreen shrub with broadly ovate to rounded medium green leaves, The flowers are produced in axillary corymbs of fragrant red, pink to white bloom from late summer to the autumn. *Dombeya mastersii* Hook.f. syn.*Dombeya burgessiae* Gerrardex Harv. Sond belongs to Sterculaiaceae. A genus of evergreen shrubs or small trees, ornamental in bloom, is found in tropical Africa, Madagascar and Nascarene islands. It is tried as a source of fibre1.

Experimental Methods

The fresh flowers of *Dombeya mastersii* , collected from the slopes of Kodaikanal Hills during December, were extracted with MeOH, under reflux. The alcoholic extract was concentrated *in vacuo* and the aq. Concentrate successively fractionated with petroleum ether (60 - 80 ° C), peroxide free ether and ethyl acetate. The petrol and Et_2O fractions did not yield any isolable material.



EtOAc fraction was concentrated *in vacuo* and left in chilled conditions for 15 days. It came out yellow crystals on recrystallization from MeOH (m.p. 249 – 251 ° C).It is soluble in EtOH and acetone. It is insoluble in cold water. It answered Wilson's boric acid [2], Gibb's [3], Horhammer-Hansel[4] and Molisch's tests. It had 257, 269 sh, 372;+ NaOMe 241 sh, 291, 367, 457 (dec.) ; + $AlCl_3$ 359 sh, 273, 339, 458; $AlCl_3$ / HCl 268, 303 sh, 365, 426; + NaOAc 276, 378, 428 sh (dec.) ; +NaOAc/H_3BO_3 261, 289, 389. The structure of the compound has been ascertained as quercimeritrin, by comparison with an authentic sample isolated from *Gossypium herbaceum* [5] and had Rf values of quercetin 7 - O – glucoside.

Hydrolysis of the glycoside

The glycoside was hydrolysed with 7 % H_2SO_4 in the usual way, and the aglycone was found as quercetin and the sugar as glucose. A quantitative hydrolysis using Folin-Wu's micro method revealed it to be a monoside.

Results and discussion

The fresh flowers of *D. mastersii* have been found to contain the yellow pigment, quercimeritrin a flavonol glycoside. UV spectrum of the glycoside exhibited two major peaks at 372 nm (band I) 257 nm (band II) which revealed it to be a flavonol glycoside. The bathochromic shifts observed in addition shift reagents proved the presence of quercimeritrin. The H-1 and C-13 nmr soectra ascertained the same.

CCl_4 induced hepatitis and the drug treatment

The aim of the present study is to analyse the hepatoprotective activity of the yellow pigment isolated from the fresh flowers of *Dombeya mastersii*. This can be done by estimating the level of total protein[6], albumin[7], cholesterol[8], triglycerides [9] , SGOT [10], SGPT[11] , Acid phosphatase [12], Alkaline phosphatase [13], and total protein in liver tissue [14], during the exposure of CCl_4 on Albino rats and to evaluate the effect of different doses of the isolated yellow pigment.

In the drug treated group serum cholesterol level was found to be increased. Serum enzymes, acid phosphatase, alkaline phosphotase were found to be decreased. The decrease in drug treated group may be due to the protective membrane stabilizing action of the flavonoid on lysosomes, The CCl_4 induced hepatic injury results are displayed below.

CCl_4 induced hepatic injury - Results

subject	Drug dose	Total Protein g/dl	Albumin mg/dl	Cholesterol mg/dl	Trigly Cerides mg/dl	SGOT	SGPT	acid phosphate u/l	alkaline phosphatase u/l	Total Lipid in liver tissue mg/g
normal	Iso Saline 85%	6.8450	5.962	51.933	121.03	313.5	120.8	87.26	52.884	50
control	Isosaline	6.299	3.959	32.060	89.6	314.3	197.7	99.9	92.21	10mg/ 100 mg
Std drug ezafib Rate	1.1	7.335	3.703	44.550	45.41	316.4	201.4	84.3	32.26	70
Quercimeri Trin	25	4.721	2.896	62.51	115.07	13.03	21.31	2.10	37.90	Liver Tissue 5 mg/100 mg

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