Chromatographic Identification of Some Flavonoids of Matricaria Chamomilla Growing in Iraq

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الخلاصة

تبين من خلال الدراسة التي اجريت على المستخلص الكحولي للنورات المزهرة لنبات البابونج الذي ينمو في العـراق احتوائـه علـى المركبـات الفلافونيديـة (الكورسـيتين III والايزورهامنتين IV) بإستعمال تقنية كروماتوغرافيا الطبقة الرقيقة ومقارنة المركبـات مـن خلال قيم الـ R_f لها في الجداول القياسية وبإستعمال الكورسيتين كمركب قياسي للمقارنة.

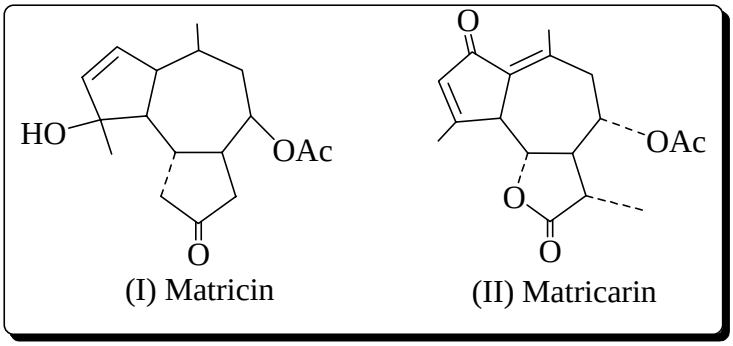
ABSTRACT

Ethanolic extract of the flower-head of matricaria chamomilla which growing in Iraq showed the presence at last of two new flavonoids quercetin (III) and isorhamnetin (IV), which gave a bright yellow colour during TLC separating under U.V light. These compounds were investigated on the basis of the comparison of their R_f-values in tables and using quercetin as authentic sample for comparison.

Introduction

Matricaria chamomilla[1,2] is well established as ahousehold medicine, the dried flower-head is the usual form of the crud drug. It is used in Europe, Egypt, south Africa and also in Iraq[3], moreover in many other countries from many objectives, e.g. convulsions in children, diarrhoea, colic and acidity[4].

Isolation of sesquiterpene lactone has been reported[5] e.g. matricin (I) and matricarin (II) from M. chamomilla.



(I) Matricin (II) Matricarin

The active fraction of the volatile oil of M. chamomilla contains chamazullene which is the blue constituents of the oil which it evideutly owes its blue colour, moreover the other compounds are bisablolo, bisabolol oxides A, B and spiroether has been found.

The most important chemical composition[6] together with an acidic mucilage, coumarins (umbeliferone, herniarian), phenolic acids and flavonoids, these flavonoids are represented by flavone and flavonol glycosides.

EXPERIMENTAL

1. A Crude Ethanolic Extract[7,8]

The dried flower-head of matricaria chamomilla (25 gm) were extracted with 70% ethanol in a soxhlet extractor for 3 days. The ethanolic extract was concentrated under vacuum to give a crude ethanolic extract with a deep yellow oily residue (2.5 gm).

2. Acid Hydrolysis of A Crud Ethanolic Extract[8]

The deep yellow oily residue (2.5 gm) was refluxed with 2N HCl (100 ml) for 0.5 hr, cooled and extracted with ethyl acetate (2x50 ml).

The organic layer was dried with magnesium sulphate and evaporated to dryness to give the residue oil.

3. Identification of Flavonoids[9]

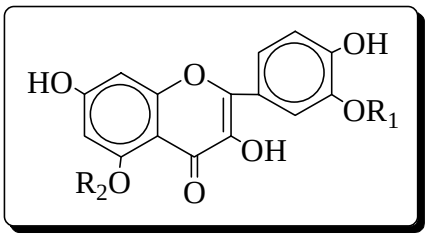
The previous residue oil dissolve in ethanol, was then chromatographed one-dimentionally on silica gel in two solvent systems, BAW (n-Butanol-acetic acid-water, 4:1:5) and Forestal (conc. HCl-acetic acid-water, 3:30:10). Both systems gave three spots, R_f (0.39, 0.64, 0.75 for the former and 0.21, 0.40, 0.53) for the latter which correspond to the quercetin (R_f 0.64, 0.40) and Iisorhamnetin (R_f 0.75, 0.53), with a bright yellow colour spots after spraying the plates with ammonia under (U.V) light. The first spot with (R_f 0.39, 0.21) in the two solvent system is still unknown. Typically R_f values for the flavonoid compounds in two solvent system are shown in Table (1), Fig (1).

RESULTS AND DISCUSSION

In the previous study coumarin[2] compounds are presented in this plant, (Umbelliferone and Herniarin).

Several flavonoid compounds[11] (e.g. apegenin, rutin, Isorhamentin and chrysoerol in M. Chamomilla have reported[10].

In a continuatius of this work, we have separated at least two flavonoids (quercetin III and Iisohamentin IV) from ethanolic extract by using TLC-plates on silica gel G which could be visualized as abright yellow colour after spraying the plates with ammonia under U.V lamp. Two solvent systems have been used (BAW) and Forestal to separate three compounds (R_f 0.39, 0.64, 0.75,) for the former and (R_f 0.21, 0.40, 0.53) for the latter. The first spot still unknown with R_f (0.39, 0.21) in each solvent systems. Table (1) and Fig (1).



(III) Quercetin, R_1, R_2=H
(IV) Isorhamnetin, R_1=Me, R_2=H

Table (1)[9]: Typical R_f-values for some flavonoids

Flavonoids	R_f in solv.		Colours in U.V plus ammonia
	BAW	Forestal	
Kaempferol	0.84	0.54	Bright yellow
Quercetin	0.62	0.42	Bright yellow
Myricetin	0.43	0.29	Bright yellow
Isorhamnetin	0.74	0.53	Bright yellow
Ethyl acetate ext.	0.39	0.21	Bright yellow
	0.64	0.40	Bright yellow
	0.75	0.52	Bright yellow

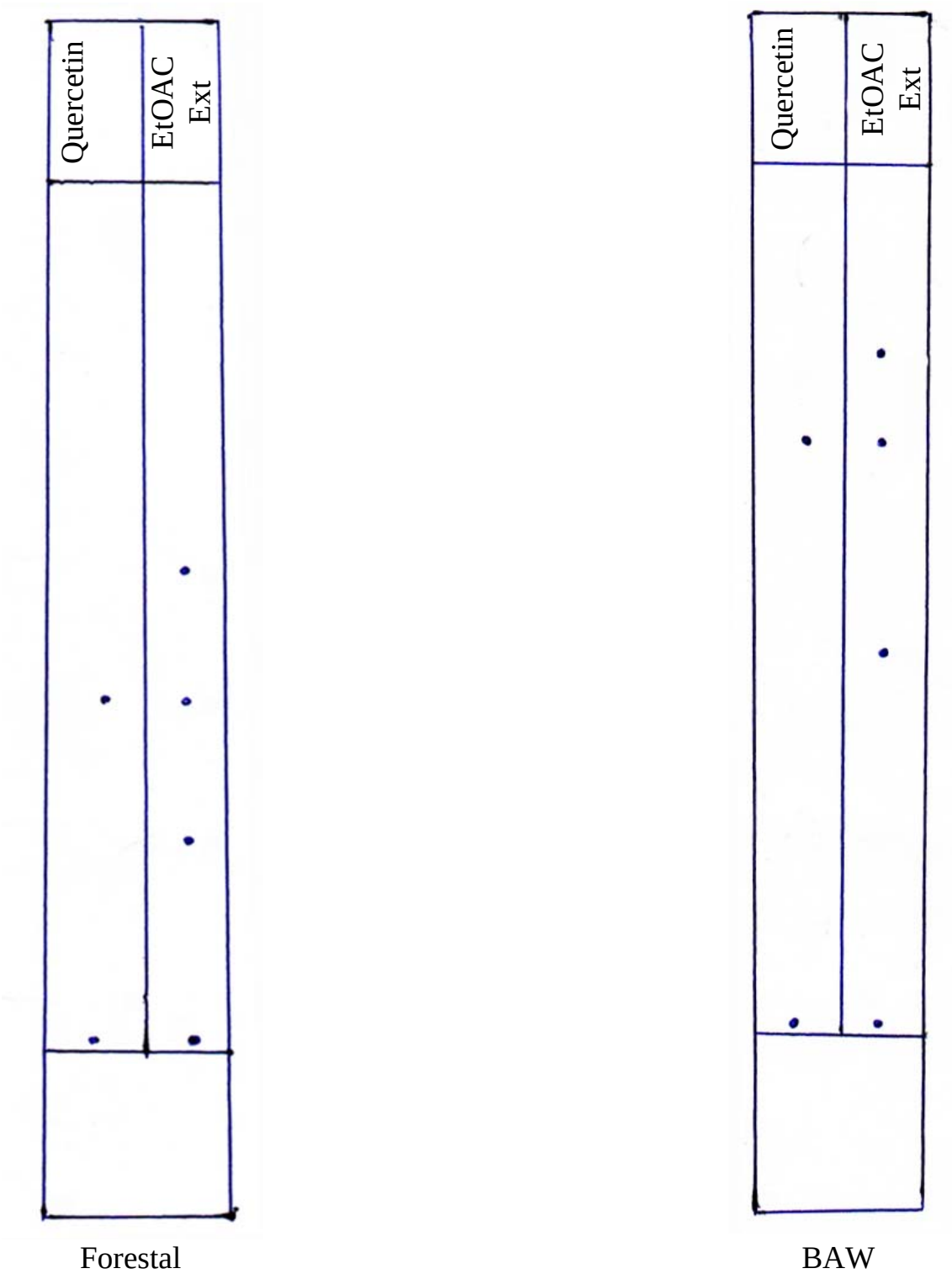


Fig. (1): Chromatogram of some flaonides present in EtOAS extract of M. chamomilla by using solvent system

(1) Forestal (Conc. HCl: Acetic acid: water; 3:30:10)

(2) B. A. W (n-Butanol: Acetic acid: water; 4:1:5; v/v/v)

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