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PHYTOCHEMICAL SCREENING OF SPECIMENS FROM ERMENEK-MUT-GÜLNAR IV.

Nevin TANKER (*)
Mehmet KOYUNCU (*)
Maksut COŞKUN (*)
Filiz MERİÇLİ (**)

SUMMARY

Altogether 121 species from Liliaceae, Papaveraceae, Ranunculaceae, Rhamnaceae, Rosaceae, Scrophulariaceae and Solanaceae families were screened for the presence of tannins, alkaloids, coumarins, flavonoids, anthocyanins, saponins, cardiac glycosides and antraquinones. The number of positive tests obtained was 86 for tannins, 39 for alkaloids, 46 for coumarins, 121 for flavonoids, 58 for anthocyanins, 44 for saponins, 25 for cardiac glycosides and 8 for anthraquinones.

Key Words: *Phytochemical screening, Liliaceae, Papaveraceaae, Ranunculaceae, Rhamnaceae, Rosaceae, Scrophulariaceae, Solanaceae, tannins, alkaloids, coumarins, flavonoids, anthocyanins, saponins, cardiac glycosides, anthraquinonens*

ERMENEK-MUT-GÜLNAR YÖRESİ BİTKİLERİ VE ANA ETKEN MADDELERİNİN ARAŞTIRILMASI IV*

ÖZET

Liliaceae, Papaveraceae, Ranunculaceae, Rhamnaceae, Rosaceae, Scrophulariaceae ve Solanaceae familyalarına ait 121 tür, tanen, alkaloit, kumarin, flavonoit, antosiyanin, saponin, kardiyoaktif heterozit ve antrakinon açısından taranmıştır. Çalışılan türlerin hepsinde flavonoit, 86 türde tanen, 58 türde antosiyanin, 46 türde kumarin, 44 türde saponin, 39 türde alkaloit, 25 türde kardiyoaktif heterozit ve 8 türde antrakinon tespit edilmiştir.

(*) Ankara University Faculty of Pharmacy, Department of Pharmacognosy, Tandoğan 06100, ANKARA
(**) İstanbul University, Faculty of Pharmacy, Department of Pharmacognosy, Beyazıt, 34452, İSTANBUL

Introduction

In our previous papers (1-3), we have already reported 242 taxa from Ermenek-Mut-Gülnar triangle (Turkey) for their active constituents, such as tannins, alkaloids, coumarins, flavonoids, anthocyanins, saponins, cardiac glycosides and anthraquinones. The present paper reports the results of phytochemical screening of 121 taxa belonged to seven families (Liliaceae, Papaveraceae, Ranunculaceae, Rhamnaceae, Rosaceae, Scrophulariaceae and Solanaceae) and provides data on the isolation of a number of new valuable plant constituents both chemical and pharmacological aspect.

Material and Methods

The plant specimens were collected from Ermenek-Mut-Gülnar area. Air dried samples were sent to the laboratory. Herbarium specimens of all plants are preserved in the "Ankara Üniversitesi Eczacılık Fakültesi Herbaryumu (AEF)". For the analysis, phytochemical screening methods which require small amounts of samples have been chosen (4,5).

Results

The number of taxa that giving positive tests and the results of phytochemical screening were given in Table 1 and 2.

Table I. The Number of Taxa Giving Positive Tests

FAMILY	Tannins	Alkaloids	Coumarins	Flavonoids	Anthocyanins	Saponins	Cardiac Glycosides	Anthraquinones
Liliaceae	20	4	16	36	21	17	4	4
Papaveraceae	17	20	5	20	16	3	-	-
Ranunculaceae	9	5	3	18	10	4	5	-
Rhamnaceae	5	-	4	5	-	-	-	-
Rosaceae	12	-	5	12	4	2	2	-
Scrophulariaceae	20	7	10	27	5	15	14	-
Solanaceae	3	3	3	3	2	3	-	-
Total	86	39	46	121	58	44	25	8

Table II. Results Of Phytochemical Screening

Family/Botanical name	Month	Plant Part	Tannins	Alkaloids	Coumarins	Flavonoids	Anthocyanins	Saponins (FI)	Cardiac Glycosides	Anhraquinones
LILIACEAE										
Allium flavum L. ssp tauricum (Besser ex Reichb.) Stearn	6	Bl	+	-	+	+	-			-
A. atroviolaceum Boiss.	7	Fr						1000		
		W	+	-		+	+			
		Bl			(+)					-
A. bassitense Thieb.	5	Fr	-			+	+	+		
		Bl			(+)					-
A. bourgeaui Rech. fil. ssp. bourgeaui	7	H	-			+	+			
		Fr		-				4000		
		Bl			-					-
e. A. cassium Boiss. var. hirtellum Boiss.	6	H	+			+	+			
		Bl			-					-
		W		-						
e. A. gayi Boiss.	4	Fr	-	-		+	+			
		W			-					-
e. A. isauricum Hub. -Mor. et Wendelbo	6	Fl	-			+	-			
		Bl			(+)					-
		W		-						
A. scorodoprasum L. ssp. rotundum (L.) Stearn	6	Fl	-	-		+	+			
		Bl			-					-
A. sphaerochephalon L.	6	Fl	-			+	+	+		
		W			(+)					
		Bl		-						-
A. vineale L.	7	Fl	-	-		+	+			
		Bl			-					-
Asparagus officialis L.	7	Lf			(+)			100		-
		Fr	+			+	-			

Asphodeline lutea (L.) Reichb.	4	Fr	+		+	+	+					(+)
e A. rigidifolia (Boiss.) Baker	5	Lf	+			+	+	100				
		Fl			(+)							(+)
A. taurica (Pallas ex Bieb.) Kunth	6	Fl			+							(+)
		Lf	+			+	-					
		Fr						100				
Asphodelus aestivus Brot.	4	Fl						-				
		Fl,Lf	-		-	+	+					+
e. Bellevalia modesta Wendelbo	3	H	-			+	-					
		Bl			-			3333				-
Colchicum szovitsii Fischer et Mey.	3	H	+	+		+	+					-
		W			-							
C. tauri Siehe	3	H	+			+	-					
		W			-							
		Bl		+								-
Fritilllaria acmopetala Boiss. ssp. acmopetala	4	Fl,Lf	+			+	+					
		W			(+)							
		Bl		(+)								-
F. persica L.	4	Fl,Lf	+	(+)		+	+					
		W			(+)							-
Gagea arvensis (Pers.) Dumort.	4	H	-		(+)	+	-					-
		Bl						-				
Hyacinthella heldreichii (Boiss.) Chouard	3	H	-			+	+					
		W			-							-
Muscari armeniacum Leichtlin ex Baker	3	Fl,Lf	+		-	+	+					-
		Fl,Fr						-				
M. comosum (L.) Mill.	5	Fl	+			+	+					
		Fl,Fr			-			+				-
M. moschatum Willd.	4	Fr,Lf	-			+	+					
		Bl			-							-
M. tenuiflorum Tausch	5	Fl,Lf	+		-	+	+					-
		Fr						+				

Ornithogalum fimbriatum Willd	5	H	-			+	-					
		W			(+)							-
		Bl						+		-		
O. flavescens Lam.	6	Fr,Lf	+		+	+	-					-
		Fr						+				
O. lanceolatum Lab.	3	H	+			+	-					
		W			(+)							-
		Bl						+		-		
O. montanum Cyr.	3	H	-			+	-					
		W			-							-
		Bl								+		
O. nutans L.	4	Fl,Lf	+		-	+	-					-
		Bl						+		-		
O. pyramidale L.	5	Fl,Lf	-		(+)	+	-					-
		Bl						+		-		
O. sphaerocarpum Kerner	4	Fl,Fr	+			+	-	+				
		Bl			-					(+)		-
O. tenuifolium Guss.	5	H	+		-	+	-					-
		Bl						-		(+)		
Scilla autumnalis L.	10	H	-			+	+					
		Bl			-			+		(+)		-
Tulipa armena Boiss.	4	Fl,Lf	+			+	+	-				
		W		-	-							-
PAPAVERACEAE												
Corydalis solida (L.) Swartz	4	H	-	+	(+)	+	-			-		-
Fumaria asepala Boiss.	4	H	+	+	-	+	+			-		-
F. cilicica Hausskn.	5	H	+	+	-	+	+			-		-
F. densiflora DC.	6	H	+	+	-	+	+			-		-
F. kralikii Jordon	5	H	+	+	-	+	+			-		-

F. officinalis L.	4	H	-	+	-	+	+		-	-
F. parviflora Lam.	6	H	+	+	-	+	+		-	-
F. vaillantii Lois.	6	H	+	+	-	+	+		-	-
Glaucium flavum Crantz	10	Fl,Lf	+	+	(+)	+	+	3333	-	-
G. leiocarpum Boiss.	6	Fl,Lf	+	+	+	+	+	+	-	-
Hypecoum imberbe Sibth. et Sm.	7	H	+	+	-	+	+	250	-	-
H. procumbens L.	4	H	+	+	-	+	+		-	-
Papaver apokrinomenon Fedde	6	Fl,Fr		+						
		Lf	+		-	+	-		-	-
P. argemone L.	4	H							-	
		Fr	+	+	-	+	-			-
P. dubium L.	4	Fl-Lf	+		-	+	+		-	-
		Fr		+						
P. hybridum L.	4	H	+		-	+	-		-	-
		Fr		+						
P. lacerum Popov	4	Fl,Lf	-			+	+		-	
		Fr,Lf		+	(+)					-
P. macrostomum Boiss. et Huet ex Boiss.	6	Fr,Lf	+		-	+	+		-	-
		Fl,Fr		+						
P. rhoeas L.	6	Fl,Lf	+	+	-	+	+		-	-
Roemeria hybrida L. ssp. hybrida	4	H	+		+	+	+		-	-
		Fr,Fl		+						

RANUNCULACEAE

Adonis aestivalis L. ssp. aestivalis	6	H		-	-				+	-
		Fl,Fr	-			+	+			
A. flammea Jacq.	5	H		-	-				+	-
		Fl	-			+	+			
A. microcarpa DC.	4	H	-	-	-	+	+		+	-

Anemone blanda Schott et Kotschy	4	H	+			+	+			-	
		Lf		-	-						-
		R						500			
A. coronaria L.	4	H	+			+	+			-	
		Lf		-	+						-
		R						2500			
Consolida hellespontica (Boiss.) Chater	7	H		+	-					-	-
		Fl	-			+	+				
C. orientalis (Gay) Schröd.	6	H		+	-					-	-
		Fl	–			+	+				
C. regalis S.F. Gray	7	H		+	-					-	-
		Fl	-			+	+				
C. thirkeana (Boiss.) Schröd.	7	H	-	+	-	+	+			-	-
Delphinium peregrinum L.	6	H		+	-			-		-	-
		Fl	+			+	+				
Nigella arvensis L. var. glauca Boiss.	7	H	+	-	-	+	-	333		-	-
N. stellaris Boiss.	5	H		-	-			6250		(+)	-
		Fr,Lf	-			+	-				
Ranunculus argyreus Boiss.	4	H		-	-					-	-
		Fl,Lf	+			+	-				
R. arvensis L.	4	H		-	+					-	-
		Fr,Lf	+				-				
R. cuneatus Boiss.	5	H		-	-					(+)	-
		Fl	-			+	-				
R. millefolius Banks et Sol.	4	H		-	+					-	-
		Fl	+			+	-				
R. sericeus Banks et Sol.	5	H		-	-					-	-
		Hf,Lf	+			+	-				
R. sprunerianus Boiss.	4	H		-	-					-	-
		Fl,Lf	+			+	-				

RHAMNACEAE

Frangula alnus Miller ssp.alnus	7	B			+							+
		Fr,Lf	+		(+)	+	-				-	+
Paliurus spina-christi Miller	5	B			-						-	-
		Fl,Lf	+		-	+	-					-
Rhamnus libanoticus Boiss.	6	B			+						-	+
		Fl,Lf	+		-	+	-				-	+
R. oleoides L. ssp.graecus (Boiiss. et Reut.) Holmboe	4	B			+						-	+
		Fr	+		-	+	-				-	(+)
e R. petiolaris Boiss.	7	B			+						-	+
		Fr,Lf	+		(+)	+	-				-	(+)

ROSACEAE

Amygdalus communis L.	4	Fl,Lf	+		-	+	+	-			-	-
Crataegus aronia (l.) Bosc. ex DC. var. aronia	6	B			-			-			-	-
		Fr	+			+	-					
C. monogyna Jacq. ssp. monogyna	6	Fr,Lf						+				
		Fr	+		-	+	+				-	-
Cotoneaster nummularia Fisch.et Mey.	5	Fl,Lf	+		-	+	-	-			-	-
Eriolobus trilobatus(Poiret) Roemer	5	Fl,Lf	+			+	-	-				-
		Fr			-						-	-
Orthurus heterocarpus (Boiss.) Juz.	5	H	+		(+)	+	-	-			-	-
Potentilla erec L.	6	H	+		-	+	-	-			-	-
Pyrus amygdaliformis Vill.	4	Fl,Lf	+		-	+	-	-			-	-
Rosa canina L.	6	Fr,Lf	+		+	+	+				-	-
R. foetida J. Herrm ssp.	5	Fl,Lf	+		+	+	-				-	-
R. heckeliana Tratt. ssp. orientalis (Dupont) Meikle	7	Fl,Lf									-	
		Fr	+		+	+	-					-

Rubus sanctus Schreber	5	Fl,Lf	+		(+)	+	+			-	-			

SCROPHULARIACEAE

Anarrhinum orientale Bentham	6	Fl,Lf	+		+	+	-				-			
		Lf								+				
e Digitalis cariensis Boiss ex Jaub. et Spach	6	Fl,Lf	+		(+)	+	-				-			
		Lf							142	+				
Linaria chalepensis (l.) Miller var. chalepensis	4	H	-		+	+	-			+	-			
		Fr		+										
e L. corifolia Desf.	6	H	-		-	+	-				-			
		Fl,Lf		(+)						+				
L. genistifolia (L.) Miller ssp.	6	Fl			+									
e confertiflora (Boiss.) Davis		Fl,Lf	+	(+)	+	+	-			+	-			
e ssp. polyclada (Feenzl) Davis	6	Fl,Lf	+	+	(+)	+	-			(+)	-			
L. simplex (Willd.) DC.	4	Fl,Fr	+	(+)		+	-							
		Fl,Lf			+					+	-			
Parentucellia latifolia (l.) Caruel	4	H	+		+	+	+	-			-			
Scrophularia canina L. ssp. bicolor (Sm.) Greuter	5	H			+					-	-			
		Fl,Lf	-	-		+	-							
S. catariifolia Boiss. et Heldr.	6	H			-					+	-			
		Fl,Lf	-	-		+	-							
S. cryptophila Boiss. et Heldr.	6	H			-					+	-			
		Fl,Lf	-	-		+	-							
S. libanotica Boiss. ssp. libanotica var. australis R.Mill	5	H			-					(+)	-			
		Fl,Lf	-	+		+	-							
S. mersinensis Lall	4	H			-					+	-			
		Fl,Lf	-	-		+	-							
S. xanthoglossa Boiss. var. decipens (Boiss. et Kotschy) Boiss.	4	H			-					-	-			
		Fl,Lf	+	-		+	+							
e Verbascum chionophyllum Hub.-Mor.	6	Fl,Lf	+	-	(+)	+	-	+		-	-			

e	V. cucullatibracteum Hub.-Mor.	6	Fl,Lf	+	-	-	+	-	+		-	-
e	V. dumulosum Davis et Hub.-Mor.	7	Lf	+	-	-	+	-	+		-	-
e	V. leuconeurum Boiss. et Heldr.	6	Lf	+	-	-	+	+	1000		-	-
e	V. obtusifolium Hub.-Mor.	7	Lf	+	-	-	+	-	+		-	-
e	V. pseudoholotrichum Hub.-Mor.	5	Lf	+	-	-	+	-	333		-	-
e	V. pterocladum Hub.-Mor.	6	Fl,Lf	+	-	+	+	-	1250		-	-
	Veronica anagallis aquatica L.	6	Fl,Lf	+	-	-	+	-	+		+	-
	V. campylopoda Boiss.	6	H	+	-	-	+	-	+			-
	V. cymbalaria Bodard	3	H	+	-	-	+	-	+		+	-
e	V. macrostachya Vahl	4	H	+		-	+	+	+		-	-
	V. pectinata L. var. pectinata	5	H	+	+	-	+	+	100		-	-
	V. triloba (Opiz) Kerner	4	H	+	-	-	+	(+)	+		+	-

SOLANACEAE

	Hyoscyamus aureus L.	6	Fl Lf	+	+	(+)	+	-	125		-	-
	H. niger L.	6	Fl,Lf	+	+	+	+	+	+		-	-
	H. reticulatus L.	5	Fr,Lf	+	+	+	+	+	250		-	-

..... Abbreviations

H: Herb
Fl: Flowers
Lf: Leaves
"-" absent
"(+)" traces
"+" present

Fr: Fruits
Bl: Bulb
B: Bark

R: Rhizome
W: Whole plant
e=Endemic

FI=Foaming index

The present screening may serve for future workers to select a group of plants having similar chemical constituents of a particular class to isolate biologically active compounds.

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REFERENCES

1. TANKER, N., KOYUNCU, M., COŞKUN, M., İLİSULU, F., SEZİK, G., (1984) Ermenek-Mut-Gülnar Yöresi Tıbbi Bitkileri ve Ana Etken Maddelerinin Araştırılması I. Compositae Familyası, **Doğa,** A_2, 229-243.
2. TANKER, N., KOYUNCU, M., COŞKUN, M., İLİSULU, F., SEZİK, G., (1985) Ermenek-Mut-Gülnar Yöresi Bitkileri ve Ana Etken Maddelerinin Araştırılması II. Leguminosae Familyası, **Doğa, C, 9,** 64-78.
3. TANKER, N., İLİSULU, F., KOYUNCU, M., COŞKUN, M., (1986) Phytochemical Screening of Plants from the Ermenek-Mut-Gülnar (Turkey) Area, III. Labiatae, **Int. J., Crude Drug Res., 24 (4),** 177-182.
4. FARNSWORTH, N.R., (1966) Biological and Phytochemical Screening of Plants, **J.Pharm. Sci. 55,** 225-276.
5. ODEBIYI, O.O., SOFOWORA, E.A., (1978) Phytochemical Screening of Nigerian Medicinal Plants II, **Lloydia, 41,** 243-246.