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Research Article

Survey of Iranian Plants For Saponins Alkaloids Flavonoids And Tannins. IV

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Abstract

A total of 149 plant extracts representing 49 different families has been screened for saponins, flavonoids, tannins and alkalodids. positive tests obtained were 145 (97) for saponins 74 (50%) for alkaloids 76 (51%) for flavonoisds and 60 (40%) for tannins.

Rusult and discussion

The reslults of a preliminary chemical examination of 555 plant samples was reported in the previous papers (1 - 3). In our continuing investigation for chemical and bioactive compounds we screened 149 plants representing 49 different families.

screening has been done for saponins, alkaloids tannins and flavonoids. Of 149 plant samples collected from various parts of Iran, 145 samples have given a positive test for saponins, 74 for alkaloids, 76 for flavonoids and 60 for tannins. The results obtained are shown in table 1.

In this investigations some species in the family Labiatae have tested positive for the first time.

Materials and methods

The plant samples were collected from different parts of Iran, namely from Tehran, Karadj, Damavand, Fasham.Lashgarak, Kandavan, shemshak, Sahand, Taleghan Cashan and Lorestan.

The samples were air dried in the shade and sent to the laboratory for analyses. Herbarium specimens are deposited in the Herbarium of the Department of Pharmacognosy, School of Pharmacy Medical sciences university of Tehran.

Extraction procedures :

100g of the air dried plant material was milled to a soft powder and extracted with methanol in a soxhlet for 12 h. the methanol was removed under reduced pressure and the extract kept in the refrigerator until used.

Test for alkaloids :

1g of the extract was dissolved in 40 ml 2% sulphuric acid and filtered. The solution was treated with 10% ammonia to PH = 9 and extracted with 3 × 40 ml chloroform. The chloroform solution was evaporated to 2 ml under reduced pressure and divided in to two parts.

To first part Mayer's reagent was added. The presence of alkaloids was indicated if a white precipitate was obtained respectively.

The second part was chromatographed on silica gel GF 254 plates and eluted with MeOH - NH4OH (97 :3) for 16 cm, then sprayed with Dragendorff reagent. Orange spot indicated the presence of alkaloids.

Test for flavonoids :

0.5 g of extract was dissolved in 4 ml of water and methanol (1 : 1) and centrifuged. To solution were added 0.5 ml conc. HCL and 100 mg of magnesium powder. The presence of flavonoids was indicated if within two min. a pink or red color developed which could be extracted with amyl alcohol.

Test for tannins :

0.5 g of extract was dissolved in 5ml of water and filtered. Adding 0.2 ml of 5% ferric chloride solution, the formation of a blue - black or green - black bulky precipitate indicates the presnce of tannin.

0.5 g of extract was dissolved in 5 ml of water and filtered . Adding 1 ml of 1 percent solution of gelatin containning 10 percent sodium chloride. The presence of tannin was indicated if an off - white precipitate obtained respectively.

Test for saponins :

0.5 g of extract was dissolved in 5 ml of distilled water in test tube and shaken vigorously. The presence of saponins was indicated by a characteristic honeycomb froth at least 1 Cm in height which persist for 30 min.

REFERENECES

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2 - Y. AYNEHCHI, M.H. SALEHI SURMAGHI, GH. AMIN A. SOLTANI and N. KUMEHR; Quartr. J. Crude Drug Res., 20 , 61, (1982).

3 - Y. AYNEHCHI, M.H. SALEHI SURMAGHI, GH. AMIN , M. KHOSHKHOW and A. SHABANI Int , J. Crude Drurg Res., 23, 33, (1985).

Table 1. Chemical Constituents Found In The Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
CHENOPIDIACEAE							
Anabasis aphylla L.	573	7/84	W	+	+	-	-
Ceratocarpus arenarius L.	574	8/84	Wa	+	+	-	-
Chenopodium album L.	575	8/84	W	+	-	-	-
Chenopodium botrys L.	576	8/84	Wa	+	+	-	+
Londesia eriantha Fish. et. Mey.	577	8/84	W	+	-	-	-
Salsola brayosma (Roem. et Schut.) Dandg.	578	8/84	Wa	+	-	-	-
CISTACEAE							
Helianthemun lippii pers.	579	5/84	Wa	+	-	-	+
COMPOSITANE							
Achillea eriophora DC.	580	5/82	Wa	+	+	+	-
Achillea santolina L.	581	5/83	W	+	+	+	+
Acroption repoens (L) DC.	582	7/83	W	+	-	-	-
Arctium lappa L.	583	11/83	R	+	-	+	-
Artemisia haussknechtii Boiss.	584	9/80	W	+	+	-	+
Carthamus oxyacantha M.B.	585	5/84	W	+	-	-	-
Cichorium intybus L.	586	5/84	W	+	-	+	+
Cichorium pumila Jacg.	587	8/82	Wa	+	+	+	+
Cirsium tricholoma F. & M.	588	7/80	Wa	+	+	+	-
Cousinia calocephala Jaub & Spach	589	7/80	Wa	+	-	+	-
Echinops nizvanus Rech. f.	590	7/80	Wa	+	+	-	-
Filago arvensis L.	591	6/77	Wa	+	+	+	+
Grindelia robusta Nutt.	592	4/83	W	+	-	-	+
Hertia angustilfolia (DC). O.Kuntz	593	7/84	W	+	+	+	-
Lactuca orientalis Boiss.	594	9/83	Wa	+	-	+	+
Lactuca scariola L.	595	7/83	W	+	-	+	-
Launaea acanthodes (Boiss). O. Kuntze.	596	5/83	W	+	-	-	+
Launaea procumbens (Roxb) Ramayya & Rajagopal.		597	5/84	Wa	+	+	-
Onopordon leptolepis D.C.	598	7/80	Wa	+	-	-	-
pulicaria gnaphalodes (Vent.) Boiss.	599	8/84	W	+	+	+	+
Scariola orientalis (Boiss) Sojak. subsp. Orientalis Rech.	600	7/84	W	+	-	+	+

Table 1. Chemical Constituents Found In the Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
Senecio erucifolius L.	601	5/84	W	+	+	+	-
Sonchus maritimus L.	602	5/83	W	+	-	-	-
Tanacetum balsamita L.	603	7/80	Wa	+	-	-	-
Tragopogon acanthocarpus Boiss.	604	7/80	W	+	-	-	-
Triplerospermum decipiens C. Koch	605	7/80	Wa	+	-	+	-
Xeranthmum lomgepapposum F.et Mey.	606	7/80	Wa	+	-	+	-
CONVOLVULACEAE							
convolvulus sericeus Barm.	607	3/84	Wa	+	-	-	+
CRUCIFERAE							
Barbarea plantaginea DC.	608	5/83	Wa	+	+	-	+
Crambe kotschyana Boiss.	609	5/82	Wa	+	+	+	-
ELAEAGNACEAE							
Elaeagnus angustifolia L.	610	8/84	Wa	+	-	-	+
EPHEDRACEAE							
Ephedra ciliata Fish. et Mey.	611	5/84	Wa	+	-	-	+
EQUISETACEAE							
Equisetum palustse L.	612	7/80	Wa	+	+	-	-
EUPHORBIACEAE							
Chrozophora hieosolymitana Spreng.	613	9/83	W	+	-	+	-
Euphorbia halophila Bornm & Gaub.	614	5/83	W	+	-	-	+
Euphorbia indica Lam.	615	5/84	W	+	-	+	+
Ricinus communis L.	616	5/82	Wa	+	+	-	-
FRANKENIACEAE							
Frankenia pulverulenta L.	617	5/84	Wa	+	-	+	+

Table 1. Chemical Constituents Found In The Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
FUMARIACEAE							
Fumaria parviflora Lam.	618	5/82	Wa	+	+	+	-
GRAMINEAE							
Eremopogon foveolatus (Del.) Stap.	619	5/84	Wa	+	-	+	+
Hordeum violaceum Boiss. & Heut.	620	7/80	Wa	+	-	+	-
Phragmites australis (Cav.) Trin.	621	7/84	Wa	+	-	-	-
Stipagrostis plumosa (L.) Munro ex. T.Anders	622	7/84	W	+	-	-	-
IRIDACEAE							
Iris iberica Hoffm.	623	6/82	Wa	+	+	+	+
JUNCACEAE							
Juncus articulatus L.	624	7/80	Wa	+	-	+	+
LABIATAE							
Eremostachys codonocalyx Rech. F.	625	4/82	Wa	+	+	+	-
Hymenocrater elegans Bunge.	626	5/82	Wa	+	+	+	-
Laminum amplexicaule L.	627	4/83	Wa	+	+	+	-
Marrubium anisodon C. Koch.	628	5/82	Wa	+	+	-	-
Marrubium crassidens Boiss.	629	5/83	W	+	+	+	-
Nepeta bracteata Benth.	630	5/82	Wa	+	+	+	-
Perovskia atriplicifolia Benth.	631	11/83	F	+	-	-	-
Phlomis olivieri Benth.	632	7/80	Wa	+	+	-	+
Rosmarinus officinalis L.	633	11/83	Wa	+	-	-	-
Salvia limbata C.A. Mey.	634	5/84	W	+	+	+	+
Salvia macrosiphon Boiss.	635	5/83	Wa	+	+	+	-
Salvbia sahendica Boiss. et Buhse.	636	9/80	Wa	+	+	-	-
Stachys spectabilis choisy. ex DC.	637	7/80	Wa	+	-	-	-
Zataria multiflora Boiss	638	6/79	Wa	+	+	+	+
Ziziphora clinopodioides lam.	639	5/82	Wa	+	+	-	-
Ziziphora tenuior L.	640	5/82	Wa	+	+	+	-
LEGUMINOSAE							
Acacia farnesiana (L.) Willd	641	4/77	Wa	+	+	+	+

Table 1. Chemical Constituents Found In The Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
Acacia nubica Bength	642	3/76	Wa	+	+	+	-
Alhagi camelorum Fisch.	643	8/83	W	+	-	+	-
Cassia italica (Mill) F.W. Andr.	644	12/83	L	+	-	-	+
Glycrrhyza glabra L.Var. typica Reg L.et Herd.	645	7/84	W	+	-	+	-
Lotus garcini DC.	646	3/84	Wa	+	-	+	-
Melilotus officinalis (L) lam.	647	6/82	Wa	+	+	-	+
onobrychis spinosa L.	648	7/80	Wa	+	-	-	-
Parkinsonia aculeata L.	649	3/84	L,Fl	+	+	-	-
Prosopis Juliflora DC.	650	3/84	Fr	+	+	-	-
Sesbania sesban Merill.	651	3/84	Fl	+	+	-	-
Sophora alopecuroides L.	652	5/83	W	+	+	-	+
Trifolium repens L.	653	7/80	W	+	+	-	-
LILIACEAE							
Eremurus stenophyllus Baker	654	5/82	L	+	+	+	-
Gagea reaiculata (pall) Schutt	655	4/83	Wa	+	-	+	+
MALVACEAE							
Abution fruticosum Guill & Perr.	656	5/84	Wa	+	-	+	+
Alcea ficifolia L.	657	8/84	Wa	+	+	-	-
Malva neglecta Wallr.	658	7/80	W	+	+	-	-
Malva sylvestris L.Var. mauritiana (L) Boiss.	659	8/84	W	+	-	+	-
MORACEAE							
Ficus carica L. sabsp. rupestris (Hausskn. ex Boiss.) Browiz	660	8/84	Wa	+	-	-	+
MYRTACEAE							
Eucalyptus longicornis F. Muell	661	7/80	Wa	+	+	+	+
Eucalyptus oleosa F. Muell	662	2/82	Wa	+	+	+	+
OLEACEAE							
Jasminum sambac soland	663	3/83	Wa	+	+	+	+

Table 1. Chemical constituents Found In The Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
PALMACEAE							
Phoenix dactylifera L.	664	5/84	Wa	+	-	-	+
PAPAVERACEAE							
Papaver dubium L.	665	5/82	Wa	+	+	+	-
PLANTAGINACEAE							
Plantago lanceolata L.	666	8/84	Wa	+	+	-	-
PLUMBAGINACEAE							
Acantholimon venustum Boiss.	667	7/80	W	-	-	+	-
PODOPHYLLACEAE							
Leontice minor Boiss.	668	5/82	Wa	+	+	+	-
POLYGONACEAE							
Polygonum amphibium L.	669	9/80	Wa	-	+	+	+
Pteropyrum olivieri Jaub & spach	670	7/84	W	+	-	+	+
Rheum ribes L.	671	5/82	L	+	+	+	-
Rumex patientia L.	672	7/80	Wa	+	-	+	+
RANUNCULACEAE							
Clematis orientalis L.	673	7/84	Wa	+	-	-	-
Consolida persica (Boiss) Grossh	674	5/83	Wa	+	+	+	-
Potentila neglecta Baung.	675	10/83	R	+	-	-	+
Ranunculus arvensis L.	676	4/83	W	+	-	+	-
RESEDACEAE							
Reseda lutea L.	677	8/84	Wa	+	+	-	-
Reseda Lutea L.	678	5/83	W	+	+	-	+
ROSACEAE							
Agrimonia eupatoria L.	679	8/80	Wa	+	-	+	+
Cotoneaster nummularia F. et M.	680	7/84	Wa	+	-	+	+
Poterium sanguisorba L.	681	6/82	Wa	+	-	+	+

Table 1. Chemical Constituents Found In The Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
Sangiosorba minor Scop.	682	6/84	Wa	+	-	-	+
RUBIACEAE							
Rubia tinctorium L.	683	7/83	W	+	-	+	-
RUTACEAE							
Haplophyllum tuberculatum (Frossk) juss.	684	5/82	Wa	+	+	+	-
SALSOLACEAE							
Salsola crassa M.B.	685	9/83	W	+	+	+	-
SCROPHULARIACEA							
Scrophularia azerbaijanica Grau.	686	7/80	Wa	+	-	+	-
Verbascum oreophilum C.Koch.	687	7/80	Wa	-	-	-	-
SOLANACEAE							
Datura stramonium L.	688	10/82	Wa	+	+	+	-
Lycium shawii Roemer	689	5/84	Wa	+	-	-	-
TAMARICACEAE							
Tamarix ramosissima leded	690	8/84	Wa	+	-	+	+
THYPHACEAE							
Thypha australis schum.	691	7/80	Wa	+	+	+	-
ULMACEAE							
Celtis caucasica willd.	692	8/84	Wa	+	-	-	+
UMBELLIFERAE							
Daucus carota L.	693	8/80	W	+	+	+	-
Echinophora platyloba DC.	694	8/84	Wa	+	+	-	-
Eryngium bungei Boiss.	695	7/84	Wa	+	+	-	-
Eryngium thyrsoideum Boiss.	696	7/80	Wa	+	-	-	-
Falcaria vulgaris Benth.	697	7/80	Wa	+	+	+	-

Table 1. Chemical Constituents Found In The Plant Samples (Continued)

Species	No	Date of Collection Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
Foeniculum vulgar Gaertn.	698	10/82	Wa	+	+	+	-
Pycnocycla spinosa Decaisn	699	8/84	St	+	+	-	-
Zozimia absinthifolia (Vent) Link.	700	5/84	W	-	-	-	-
VERBENACEAE							
Vervena offici9nalis L.	701	8/84	Wa	+	-	+	-
ZYGOPHYLIACEAE							
Fagonia bruguieri DC.	702	5/84	Wa	+	-	-	-
Tribulus terrestris L.	703	9/84	Wa	+	+	-	-
Zygophyllum fabago L.	704	5/84	W	+	-	-	+

FL : Flower; Fr: Fruit; L: leave ; R: Rhizome; St: stem W: whole plant; Wa: whole above ground.

Table 1. Chemical Constituents Found In the Plant Samples

Species	No	Date of Colleotion Mo/yr	plant Part	Saponin	Alkaloid	Flavonoid	Tannin
ALLIACEA							
Allium atroviolaceum Boiss.	556	7/80	Wa	+	-	+	-
ANACARDIACEAE							
Pistacia atlantica Desf	557	5/82	L	+	+	+	-
APOCYNACAE							
Vinca major L.	558	7/82	Wa	+	+	+	+
ASCLEPIADACEAE							
Cynanchum acutum L.	559	7/83	W	+	-	+	-
BERBERIDACEAE							
Berberis vulgaris L.	560	8/84	Wa	+	+	+	+
Leontice minor Boiss.	561	4/83	W	+	+	-	+
BORAGINACEAE							
Anchusa italica Retz.	562	6/84	Wa	+	-	-	-
Heliotropium arguzioides kar & Kir	563	5/84	Wa	+	+	-	+
Heliotropium bacciferum Forsk.	564	5/84	W	+	-	-	+
Heliotropium minutiflorum Bge.	565	7/84	W	+	+	+	+
Myosotis pseudopropinqua M.pop.	566	5/83	W	+	+	+	+
Onosma pachypodum Boiss	567	7/80	Wa	+	-	-	-
CAPPARIDACEAE							
carpparis cartilagenea Decene.	568	5/84	Wa	+	-	-	-
CARYOPHYLLACEAE							
Acanthophyllum bracteatum Boiss.	569	5/84	Wa	+	-	-	-
Acanthophyllum microcephalum Boiss	570	8/84	Wa	+	+	-	+
Acanthophyllum squarrosum Boiss.	571	5/83	W	+	-	-	+
Saponaria officinalis L.	572	10/83	W	+	-	+	+