

Chemistry and Biology of Some Turkish *Haplophyllum* Species

Türkiye'de Yetişen Bazı *Haplophyllum* Türlerinin Kimyasal ve Biyolojik Özellikleri

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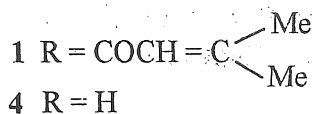
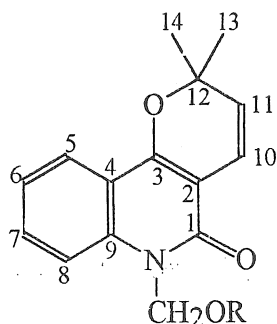
Abstract

A group of Turkish *Haplophyllum* species were studied for their chemical and biological aspects. In these studies five new alkaloids, five new lignans, three new coumarins and a number of flavonoids were isolated. The structures of all compounds were established by spectral methods. The cytotoxic behaviour of lignans were tested in various systems and a moderate activity is established in compound 11.

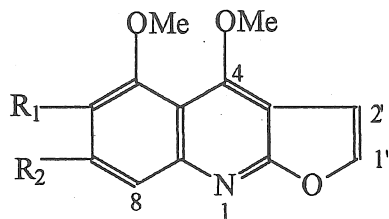
Key words. *Haplophyllum* species, alkaloids, lignans, coumarins, flavonoids.

Introduction

There are 14 *Haplophyllum* species naturally grown in Turkey. Five of the present species studied by our group, others were investigated by Profs. T. Gözler and B. Gözler (Ege University) and Prof. B. Şener (Gazi University). We have studied *H. suaveolens* as our first plant in this group, we have isolated four alkaloids one of which being a new compound. The known compounds were flindersin, γ -fagarine, kokusaginine and an angular pyrano-quinoline alkaloid was the new one a derivative of flindersine, haplophylline (1) (Ulubelen, 1984).

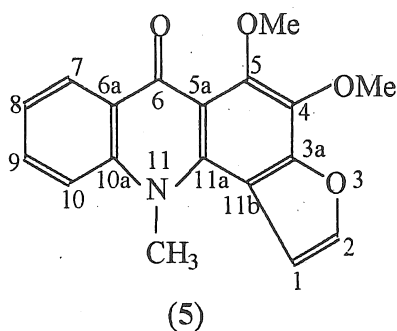


In addition to known alkaloids kokusaginine, skimmianine, γ -fagarine from *H. buxbaumii* (Ulubelen, 1985) three new alkaloids, 4,5,6-trimethoxyfuroquinoline (2), 4,5,7-trimethoxyfuroquinoline (3), and N-hydroxymethylflindersine (4) were isolated and structure determined.

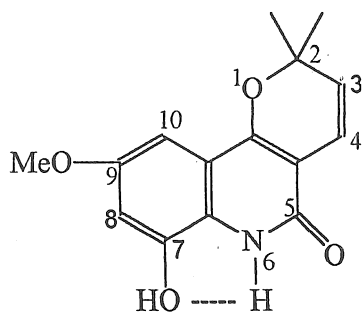


- 2 R1 = OMe R2 = H
 3 R1 = H R2 = OMe

H. thesioides (Ulubelen *et al.*, 1993 a) has yielded a new alkaloid thehaplosine (5) in addition to known alkaloids kokusaginine, skimmianine, pteleine, nkolbisine, heliparvifoline and flindersine.

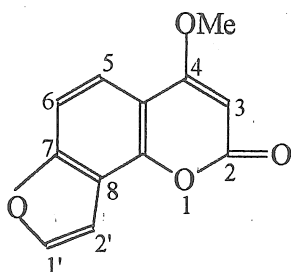


A new alkaloid, 7-hydroxy-9-methoxyflindersine (6) was isolated from *H. telephioides* (Ulubelen *et al.*, 1994).



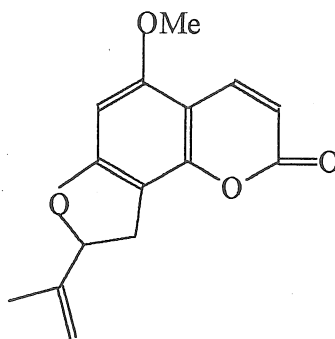
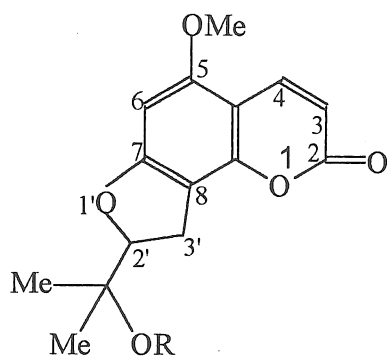
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Coumarins were also isolated from *Haplophyllum* species. From *H. thesioides* (Ulubelen *et al.*, 1993 a) seselin, scaporon, angustifolin and a new coumarin thesiolen (7) were obtained. The structures were established by spectral data.



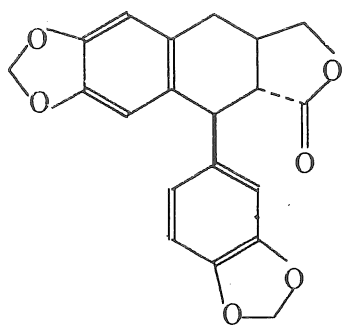
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H. ptilostylum (Ulubelen *et al.*, 1993 b) has yielded two new coumarins ptilostin (8) and ptilostol (9). In another study with the same plant (Ulubelen *et al.*, 1993 c) another new coumarin ptilin (10) was isolated which was the dehydrated derivative of 9, together with another coumarin demethoxy majurin.

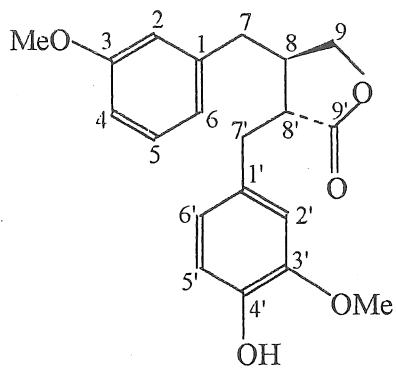


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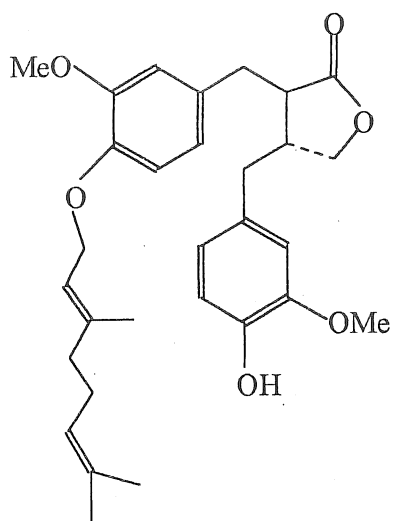
Haplophyllum ptilostylum has also yielded lignans matairesinol and arctigenin (Ulubelen *et al.*, 1993 c), and justisin B, isodaurinol together with four new lignans, one was the isomer of polygamain (1 β -polygamain) (11) and the other three were arylbutyrolactone type lignans (12-14). The cytotoxicity test of compounds 11-14 showed they were inactive against lung carcinoma (LU-1), a hormone dependent human prostate and breast cancer cell lines, but compound 11 showed moderate activity (IC₅₀ = 111.7 μ g/ml) against in the HIV-1 reverse transcriptase (p66 / p51) assay (Ulubelen *et al.*, 1994 b, 1995).



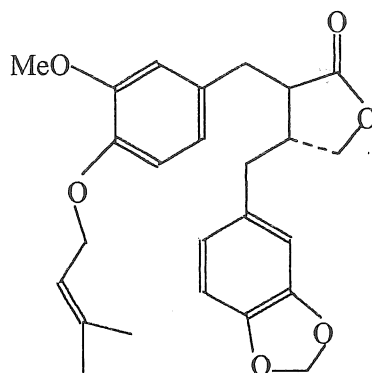
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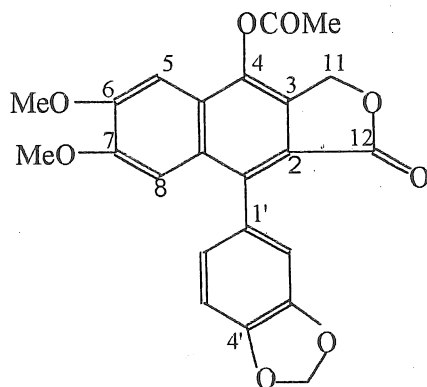


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H. telephioides (Ulubelen *et al.*, 1994 a) has also yielded a new lignan 4-acetyldiphyllin (15) together with known lignans haplomyrtin and diphyllin.



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H. suaveolens and *H. buxbaumii* have yielded a group of known flavonoids gossypetin 8-methyl ether, gossypetin 3-malonylrutinoside, quercetin 3-glucoside, isorhamnetin 3-glucoside, gossypetin 8,3'-dimethyl ether 3-glucoside, gossypetin 8,3'-dimethyl ether 3-rutinoside, isorhamnetin 3-rutinoside, apigenin 7-glucoside, quercetin, isorhamnetin and gossypetin 8,3',4'-trimethyl ether (Ulubelen, 1986).

Özet

Türkiye'de yetişen bazı *Haplophyllum* türleri kimyasal ve biolojik açıdan incelenmiştir. Bu çalışmalar sonucu beş yeni alkaloid, beş yeni lignan, üç yeni kumarin ve birçok flavonoid izole edilmiştir. Tüm bileşiklerin yapıları spektral metotlar yardımıyla aydınlatılmıştır. Lignanların sitotoksik aktiviteleri çeşitli sistemlerde araştırılmış ve 11 numaralı bileşikte aktivite saptanmıştır.

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