

Research into Diuretic Effect of *Sideritis dichotoma* Huter

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Summary : *Sideritis* species are used in folk medicine as diuretic, against common cold, in stomach disorders and to pass calculi.

Sideritis dichotoma Huter (Labiatae) is an endemic species growing in North and Northwest Turkey. It is known as "Sarıköz çayı" in Balıkesir province.

Above ground parts of the plants have been tested on albino rats for diuretic activity and biochemical parameters in urine and the effect of diuresis have been determined. The plant was found to be inactive.

Keywords : *Sideritis dichotoma*, Diuretic effect

G.T. : 25.4.1995

K.T. : 19.7.1996

Sideritis dichotoma Huter'nin Diüretik Etkisinin Araştırılması

Özet : *Sideritis* türleri halk arasında idrar söktürücü, böbrek taşlarına karşı, mide rahatsızlıklarında ve soğuk algınlığında kullanılmaktadır.

Sideritis dichotoma Huter (Labiatae) Kuzey ve Kuzey-Batı Anadolu'da yetişen endemik bir tür olup, Balıkesir yöresinde "Sarıköz Çayı" adıyla kullanılmaktadır.

Bitkinin toprak üstü kısımlarıyla albino sıçanlarda yapılan diüretik etki araştırması diüretik etki düzeyi ve idrardaki biyokimyasal parametreler üzerindeki etkileri üzerinde sürdürülmüş ve inaktif olduğu belirlenmiştir.

Anahtar kelimeler : *Sideritis dichotoma*, Diüretik etki

Introduction

Sideritis (Labiatae) is represented by 43 species, 10 subspecies and two varieties under two sections. 36 taxa are endemic to Turkey¹⁻³. *Sideritis dichotoma* Huter is an endemic species growing in Northwest Anatolia.

Sideritis species comprise the largest group of plants used as herbal tea in Turkey. They grow along the coastal regions from Balıkesir in the northwest to Kahramanmaraş in the southeast. Several species are found growing in forest cleanings in central and western Anatolia. In folk medicine, *Sideritis* species are used against stomachache, kidney stones, common cold and as diuretic²⁻⁸. *Sideritis dichotoma* is known as "sarıköz çayı" and used in common cold⁴.

α -Pinene (19.31%) and β -pinene (18.01%) were found as major constituents in its essential oil⁹. A survey of the literature has revealed that no previously published study on its pharmacology could be found.

Experimental

Plant material was collected from Kütahya: Domaniç-Develi in August 1992. A 2% infusion was prepared from the dried aerial parts of the plant. The infusion was freeze-dried and the lyophilized powder was dissolved in water before use.

Diuretic activity testing, one control and two test groups consisting of seven six-month old albino rats in each group were formed. Animals in the control group were given orally 0.5 ml water each. The 1st

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and 2nd test groups received a solution of the extract orally (0.43 mg/kg and 0.86 mg/kg, respectively). Each rat was placed in a separate cage with urine-collecting arrangement, and was given water for 24 hours. The volume and pH of the urines obtained were recorded. The urine samples were analysed for the contents of urea nitrogen, uric acid, creatinine, Na⁺ and K⁺. For the first three analysis Spectromic 20D Spectrophotometer and for the latter two analysis Beckman E2-A Analyser were used. Student-t test was employed for statistical analysis.

Results

As Table 1 indicates, urine volume was found significant only in the 1st test group (p<0.05). pH, creatinine, Na⁺ and K⁺ values obtained in both groups were found to be close to those in the control group. Therefore, no statistical difference was observed.

Urea nitrogen content was found to be significantly higher in the 2nd group than that in the control group (p<0.05).

The difference in uric acid content (p<0.05 in the first test group and p<0.001 in the 2nd test group) was found to be significant compared with the control group.

Discussion

Most *Sideritis* species are locally used as herbal tea. However, little work has been done on the pharmacology of these species. 2% and 3% infusions of *Sideritis congesta* were reported to have weak diuretic activity¹⁰. Chloroform, ethyl acetate, ethyl alcohol extracts of *S. mugronensis* were also previously found

inactive for diuretic effect¹⁵. Likewise, the present study also revealed the absence of diuretic activity in *Sideritis dichotoma* infusions, despite folk medicinal use in Turkey.

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Table I. Summary of Results

GROUPS	n	Water (ml)	Urine volume (ml)	Urine pH	Urea nitrogen (mg/dl)	Uric acid (mg/dl)	Creatinine (mg/dl)	Na ⁺ (mEq/l)	K ⁺ (mEq/l)
Control group	7	4.71±1.26	4.88±0.76	8.81±0.32	1318±61	7.28±1.26	58.70±3.30	54.52±7.45	131.0±5.5
Experiment I 0.43 mg/kg	7	7.71±1.61	7.50±0.73*	8.11±0.39	1373±114	5.00±0.97*	59.17±5.17	43.07±4.57	117.2±8.7
Experiment II 0.86 mg/kg	7	3.14±1.24	5.42±0.84	8.60±0.41	1643±118*	2.84±1.59*	62.17±4.61	53.58±3.70	120.5±6.8

p* < 0.05

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