

HYPOTENSIVE ACTIVITY OF CRATAEGUS TANACETIFOLIA

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SUMMARY

The effects of the leaf extracts of *Crataegus tanacetifolia* (Lam.) Pers. (Rosaceae) on blood pressure and heart rate have been examined by using atropin, α - and β -blockers. It has been found that the leaf extracts of *C. tanacetifolia* have hypotensive effects.

ÖZET

Crataegus tanacetifolia (Lam.) Pers. (Rosaceae) türünün yaprak ekstresinin kan basıncı ve kalp frekansı üzerine olan etkisi atropin, α -bloker ve β -bloker kullanılarak incelendi. *C. tanacetifolia* yaprak ekstresinin tansiyon düşürücü etkisi bulunduğu tespit edildi.

Key words: *Crataegus tanacetifolia*, hypotensive activity, leaf extract.

INTRODUCTION

Today cardiovascular diseases are one of the most important reason of human death. In U.S.A. more than half of the total death are caused by cardiovascular diseases (1).

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In the studies made by *Crataegus* species was shown that these species are effected especially on cardiovascular system (2,3). At this point *Crataegus* becomes more important. The use of *Crataegus* species for medicinal treatment have been started in the second half of 19. yy. for treatment of cardiovascular diseases. It is known that *Crataegus* species were used to treat angina pectoris in U.S.A. (4). The *Crataegus* extracts have anti-arrhythmic effects and have been found effective in the management of tachicardia (5). It is reported that *Crataegus* have treatment effect on cardiovascular diseases especially on normalizing hypertension (6).

The leaf, flower and fruit of *Crataegus* species are one of the most important drugs as a compound of plant drugs. *Crataegus* extracts are positive inotrop effect, increase the activity of heart muscle cells and, provides the feed of these cells. They have coroner diluter effect. Their flavonoid compound probably plays role on these properties (1). In Europe market especially in Germany there has been different proportions having *Crataegus* extracts as compound in implication. For example Crataegutt, Oxacent, Cratamed.

Crataegus tanacetifolia which is our study subject is an endemic species (7). We have investigated flavonoids of *C.tanacetifolia* species in our preciding study (8). We have examined these species effects on blood pressure, heart rate and ECG comperatively with medicinal species *C.monogyna* and established that while the leaf and flower extracts of both species had effect on blood pressure, the fruit extracts had no such effect (9). In this study we searched for the decreasement effect mechanism of the watery extract *C.tanacetifolia* species having mostly flavonoid compound.

RESULTS AND DISCUSSION

The effect of *C.tanacetifolia* watery leaf extracts on blood pressure and heart rate are shown in table 1 with atropin, table 2 with β -bloker and in table 3 with α -bloker groups.

As seen in the tables meaningfully decrease in blood pressure values are observed at the groups containing atropin and β -bloker. Also meaningfully decrease in heart frequency is enrolled within two groups as compared with the control group. However, a change isn't observed in blood pressure and heart rate in α -bloker group according to control group.

These results imply that the hypotensive effect of the aqueous extract of *C.tanacetifolia* may probably be via α -receptors or by means of another mechanism. There has not been much research done directed at clarifying this mechanism.

Table 1 : Atropine+*C. tanacetifolia* extract

Treatment	Blood Pressure (mmg Hg)	Heart rate (f/min)
Control (n = 5)	143 ± 25.8	320±34.2
Experiment (n = 10)	90 ± 8.3**	258±49.5*

Table 2 : β blocker+*C. tanacetifolia* extract (β blocker: Propranolol 1 mg/Kg)

Treatment	Blood Pressure (mmg Hg)	Heart rate (f/min)
Control (n = 5)	137.2± 23.3	379.8±43.4
Experiment (n = 10)	93.2 ± 1.14**	319±29.7*

Table 3 : α blocker+*C. tanacetifolia* extract (α blocker: Phentolamine 1 mg/Kg)

Treatment	Blood Pressure (mmg Hg)	Heart rate (f/min)
Control (n = 5)	125± 4.1	327±15.2
Experiment (n = 10)	115 ± 5.7	319±13.4

* : $p < 0.05$ ** : $p < 0.01$

The hypotensive activity in the *C.tanacetifolia* plant, especially in the leaf extract, may be due to the presence of flavonoid compounds. This effect may be the result of a vasodilatation of the smooth muscles in vessels, induced by the flavonoids, or it may be the result of a diuretic activity. *C.tanacetifolia* leaves contain 0.68% flavonoid. As a matter of fact, work has been done in support of the diuretic activities of flavonoids.

As a result, the work we have done by blocking the α -and β -receptors implies that the hypotensive effect is probably via the α -receptors or by means of another mechanism.

EXPERIMENTAL

Plant material: The leaves of *Crataegus tanacetifolia* (Lam.) Pers. were collected in May 1989 from Seben region, Bolu (Turkey). As sample of this plant, identified by Prof. Dr. Kerim Alpınar, is registered with the number ISTE 61150 in the Herbarium of the Faculty of Pharmacy, University of Istanbul.

Preparation of *C. tanacetifolia* extract: The dried leaves of the *C. tanacetifolia* were powdered and 50 grams of the material was macerated with 500 ml of water at room temperature for 24 hours. At the end of this process, the mixture was filtered and the filtrate was concentrated in vacuo, to obtain a dry extract (yield: 9,5 %). The extract was then diluted with water so as to obtain a concentration of 50 mg/ml.

Animals: 45 adult, male, Wistar, albino rats, weighing 250-350 grams were used. Each animal was anaesthetized with 35 mg/kg IP sodium pentothale. A femoral artery and vein were both cannulated. The femoral artery was used to determine blood pressure, and the latter to determine the drug application. The *Crataegus* extract was administered at doses of 50 mg/kg.

The cardiovascular parameters were determined by means of a Nihon Kohden RM 6000 polygraph.

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