

## Flavonoids of *Lysimachia atropurpurea* L.

### *Lysimachia atropurpurea* L. Bitkisinin Flavonoidleri

Melek Ulusoylu<sup>1</sup>, Elçin Gürkan<sup>1</sup> and Ertan Tuzlacı<sup>2</sup>

<sup>1</sup> Dept. of Pharmacognosy, Faculty of Pharmacy, Marmara University, Istanbul., Turkey

<sup>2</sup> Dept. of Pharmaceutical Botany, Faculty of Pharmacy, Marmara University, Istanbul., Turkey

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#### Abstract

The ethanolic extract of the aerial parts of *Lysimachia atropurpurea* were investigated. The isolated compounds were kaempferol(1), quercetin(2), apigenin-7-O-glucoside(3), luteolin(4), kampferol 3-O-galactoside(5)

**Key words:** Flavonoids, *Lysimachia atropurpurea*

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#### Introduction

*Lysimachia* is one of the largest genera of Primulaceae. There are approximately 200 species in the world but, only seven species are in Turkey (Davis, 1965). This genera consists of annual or perennial herbs and shrubs. The center of the genera is the Northern Hemisphere and especially Asian tropics.

The genera is used as diuretic, urinary antiseptic in China whereas, the macerate of *Lysimachia* species is used for skin protection by native women there (Marr *et al.*, 1998, Yasukawa, Takido, 1993). The infusion of *Lysimachia* which is named as "kargaotu" in Turkish is used as antipyretic, expectorant in traditional folk medicine in Turkey (Baytop, 1999).

The scientific investigations on these species show that flavones and flavone glycosides are found to be the major compounds (Marr *et al.*, 1998, Simpson *et al.*, 1986).

#### Materials and Methods

General methods: UV: Shimadzu UV- 2100S; IR: Perkin-Elmer 1600S FT-IR; Column chromatography: Silicagel 60 particle size 0.040-0.063mm for column chromatography (Merck); Sephadex LH-20 (Fluka); preparative TLC-silica gel 60 PF<sub>254</sub> for preparative thin layer chromatography (Merck); TLC silica gel 60-F<sub>254</sub> alumina sheets (Merck) and they are all visualized using UV(254 and 366 nm).

*Plant material:* *L.atropurpurea* was collected from Tekirdağ, North-West Anatolia (Turkey), July 1999. The plant was identified by Prof. Dr. Ertan Tuzlacı. A voucher specimen (MARE 6061) is deposited in the Herbarium of the Faculty of Pharmacy, Marmara University, Istanbul, Turkey.

*Extraction and isolation:* The air dried material (550 g) was macerated with ethanol for two days (Simpson *et al.* 1986, Guo *et al.*, 1998). The macerate was evaporated to dryness (11.2 g) and it was applied to silica gel column. The column was first eluted with petroleum ether, the elution was continued with EtOAc and EtOH in increasing amounts. In order to purify the fractions, Sephadex LH-20 column with MeOH and preparative TLC were used. Kaempferol

(4.5 mg), luteolin 7-*O*-glucoside (3 mg), quercetin (4 mg), apigenin 7-*O*-glucoside (3.5 mg), kaempferol 3-*O*-galactoside (5 mg), were isolated. The structure of the flavonoidal compounds were identified with UV spectra taken with MeOH and shift reagents (Mabry *et al.*, 1970). IR spectra were taken with reference substances.

Kaempferol, quercetin, apigenin 7-*O*-glucoside, luteolin 7-*O*-glucoside, Kaempferol 3-*O*-galactoside were isolated.

*Studied activity:* The Brine Shrimp (*Artemia salina*) lethality bioassay method was used for cytotoxic activity on the ethanolic extract and five isolated compounds were compared with umbelliferone.

## Results and Discussion

This work is the first chemical study on this species since there is not much work done with *L. atropurpurea* up to date.

Five known flavonoidal compounds were isolated and their UV spectra were taken with MeOH and shift reagents (Mabry *et al.*, 1970). Their IR spectra were taken which were also in accordance with literature data and authentic samples.

In conclusion, our study shows that *L. atropurpurea* has the same chemical constituents as the other species. The major compounds are flavone glycosides. This result is in accordance with traditional use in Turkey and the plant can be also used for the treatment of urinary system diseases.

## Özet

Bu çalışmada *Lysimachia atropurpurea* bitkisinin toprak üstü kısmının etanol ekstresi üzerinde çalışılmıştır. Ekstreden kemferol, kersetin, apigenin 7-*O*-glikozit, luteolin 7-*O*-glikozit, kemferol 3-*O*-galaktozid bileşikleri izole edilmiştir.

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