DIMERIC PROANTHOCYANIDINES FROM *Platanus orientalis* BARK

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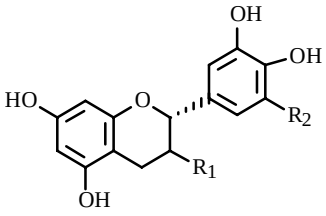
Seven species of plane-tree (Platanaceae) are distributed throughout the plant kingdom. Eastern plane-tree (*Platanus orientalis*) occurs in Middle Asia. Leaves of plane-tree are used in folk medicine as a wound-healer and ophthalmologic agent (for blepharitis and conjunctivitis); roots, as a hemostatic agent and antivenom for snake bite. Extracts of plane-tree leaves and buds are rich in biologically active substances such as flavonoids, isoprenoids, phytosterols, and vitamins. Flavonoids isolated from its buds possess a wide spectrum of physiological activity. Investigations of fallen leaves of plane-tree showed that they are rich in α-tocopherol and its derivatives [1]. Phytol derivatives from plane-tree leaves exhibited also anti-ulcer activity [2].

In continuation of these investigations, we studied the chemical composition of plane-tree bark and isolated alcohol, hexane, ethylacetate, *n*-butanol, and water fractions.

Adsorption chromatography on microcrystalline cellulose and gel filtration over Sephadex LH-20 isolated seven pure compounds from the ethylacetate fraction of the aqueous-alcohol bark extract. The physicochemical properties of these compounds, their spectral characteristics (UV, IR, and PMR), and chemical transformations (basic, acidic, and thiolytic cleavage) identified them as: (-)-epicatechin (**1**), (+)-epigallocatechin (**2**), (-)-epicatechingallate (**3**), (+)-catechin (**4**), (+)-catechingallate (**5**), (-)-epicatechin-(4-β-8)-epigallocatechingallate (**6**), and (-)-epicatechin-(4-β-8)-(-)-epicatechin (**7**).



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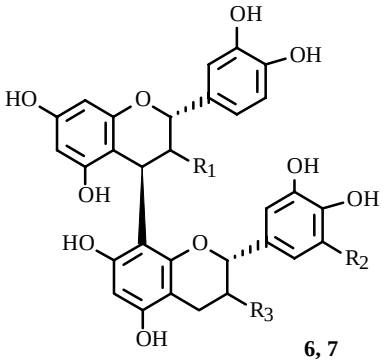

6, 7

1: R_1 = ···OH, R_2 = H;
2: R_1 = ···OH, R_2 = OH;
3: R_1 = ···OGalloyl, R_2 = H;
4: R_1 = ◄OH, R_2 = H;
5: R_1 = ◄OGalloyl, R_2 = H

6: R_1 = ···OH, R_2 = OH, R_3 = ···OGalloyl;
7: R_1 = ···OH, R_2 = H, R_3 = ···OH

It should be noted that these catechins and dimeric proanthocyanidines were isolated from plane-tree bark for the first time.

REFERENCES

1. N. K. Khidyrova, Ya. V. Rashkes, A. M. Rashkes, U. A. Abdullaev, M. T. Khodzhaeva, Kh. M. Shakhidoyatov, and M. T. Turakhodzhaev, *Khim. Prir. Soedin.*, 372 (1995).
2. N. K. Khidyrova, V. N. Syrov, Z. Khushbaktova, Ya. V. Rashkes, A. M. Rashkes, and Kh. M. Shakhidoyatov, *Khim. Farm. Zh.*, No. 5, 41 (1994).

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