

### Lignans from the Bark of *Magnolia kobus*

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The Et<sub>2</sub>O-soluble fraction from the bark of *Magnolia kobus* led to the isolation of two new lignans, (+)-(7 $\alpha$ ,7' $\alpha$ ,8 $\alpha$ ,8' $\alpha$ )-3',4,4',5,5'-pentamethoxy-7,9':7',9-diepoxy-lignan-3-ol (**1**) and (+)-(7 $\alpha$ ,7' $\alpha$ ,8 $\alpha$ ,8' $\alpha$ )-4,5-dimethoxy-3',4'-(methylenedioxy)-7,9':7',9-diepoxy-lignan-3-ol (**2**), along with five known lignans **3–7**. Their structures were established on the basis of various spectroscopic analyses including 1D- (<sup>1</sup>H, <sup>13</sup>C, and DEPT) and 2D-NMR (COSY, NOESY, HMQC, and HMBC) and by comparison of their spectral data with those of related compounds.

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**Introduction.** – *Magnolia kobus* DC belongs to the Magnoliaceae family. It is a medium-sized deciduous tree native to Japan also found in China and Korea [1]. It is a valuable decorative plant in Japan and is known under the local name Kobusi. Young buds of *M. kobus* are important ingredients in the Chinese medicine 'Shin-I' which is used as a sedative or an analgesic. In Japan, 'Shin-I' is taken internally for the treatment of headaches or colds [2]. Earlier chemical studies on *M. kobus* revealed it to be a source of bioactive terpenes and lignans [3–6]. Lignans have evoked a great deal of interest due to their widespread occurrence in nature [7–9] and use in traditional medicines [10][11]. Furofuran lignan, one of the major subclasses of the lignan family, exhibit a wide variety of biological activities including antitumor, antimutagenic, antiviral [12], antioxidant, antihypertensive [13][14], and antidiabetic activity [15], and inhibition of the platelet-activating factor (PAF) [16].

In the present study, two new furofuran lignans, (+)-(7 $\alpha$ ,7' $\alpha$ ,8 $\alpha$ ,8' $\alpha$ )-3',4,4',5,5'-pentamethoxy-7,9':7',9-diepoxy-lignan-3-ol (**1**) and (+)-(7 $\alpha$ ,7' $\alpha$ ,8 $\alpha$ ,8' $\alpha$ )-4,5-dimethoxy-3',4'-(methylenedioxy)-7,9':7',9-diepoxy-lignan-3-ol (**2**), along with five known compounds, (+)-sesamin (**3**), (+)-yangambin (**4**), (+)-kobusin (**5**), (+)-eudesmin (**6**), and (+)-magnolol (**7**), were isolated from the bark of *M. kobus* (Fig. 1). Their structures were established on the basis of various spectroscopic analyses including 1D- (<sup>1</sup>H, <sup>13</sup>C, and DEPT) and 2D-NMR (COSY, NOESY, HMQC, and HMBC) and by comparison of their spectral data with those of related compounds.

**Results and Discussion.** – Extensive chromatographic separation and purification of the Et<sub>2</sub>O-soluble fraction from the EtOH extract of *M. kobus* bark led to the isolation of the two new furofuran lignans **1** and **2**, along with the five known lignans **3–7**.

Compound **1** was obtained as white crystals and displayed a molecular-ion peak at *m/z* 432 (*M*<sup>+</sup>) in the EI-MS. Its molecular formula could be determined as C<sub>23</sub>H<sub>28</sub>O<sub>8</sub> by