

## 잠분(silkworm droppings)로부터 lignan과 flavonoid의 분리

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### Lignans and Flavonoid from the Silkworm Droppings

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#### Objectives

Silkworm droppings is an excrement of silkworm (*Bombyx mori* L.), which eats mainly mulberry leaf (*Morus alba* L.). Mulberry belongs to the Moraceae family and is distributed mainly in Korea, China and Japan. Mulberry has been also used for the treatment of hyperlipidemia and diabetes in Korean traditional medicine. And, its alcohol extracts have been reported to treatment of kidney trouble. Mulberry leaf has been studied about several pharmacological functions such as decrease blood sugar and to prevent atherosclerosis and some chemical constituents such as flavonoids, phenolics and alkaloids. Though the yearly production of silkworm droppings is more than one hundred thirty ton in Korea, only 10% is used as manure for crop cultivation. In addition, authors found that the alcohol extracts improved some skin troubles caused by atopy. So, authors carried out this study to isolate the lead compound to manifest the activity of silkworm droppings.

#### Materials and Methods

##### ○ Materials

Silkworm Droppings were received from rural development of administration, Suwon, Korea, in January 2008 (KHU080102). IR spectra were obtained with a Perkin Elmer Spectrum One FT-IR spectrometer. EI-MS was recorded on a JEOL JMSAX-505-WA. <sup>1</sup>H-NMR (400 MHz) and <sup>13</sup>C-NMR (100 MHz) spectra were recorded on a Varian Unity Inova AS-400 FT-NMR spectrometer.

##### ○ Methods

The dried and powdered silkworm droppings (10 kg) were extracted with 80% aqueous MeOH, and the concentrated extract was partitioned with EtOAc, *n*-BuOH and H<sub>2</sub>O, successively. The repeated silica gel and ODS column chromatographies of the EtOAc fraction.

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## Results

From the result of spectroscopic data including NMR, MS and IR, the chemical structures of the compounds were determined such as syringaresinol (1), 3-(4-Hydroxy-3-methoxybenzyl)-4-[(7'R),5'-dihydroxy-3'-methoxybenzyl]tetrahydrofuran (2), 2-(2-hydroxy-4-methoxyphenyl)-8-(3-methylbut-2-enyl)chroman-7-ol (3). They were the first to be isolated from silkworm droppings.

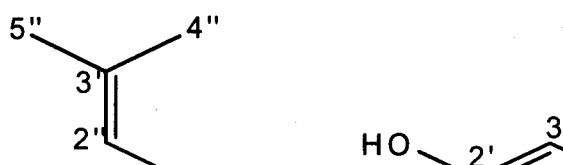
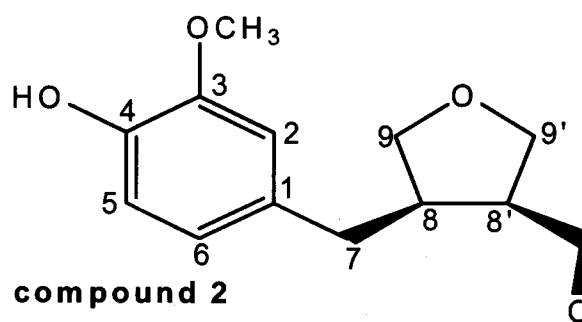
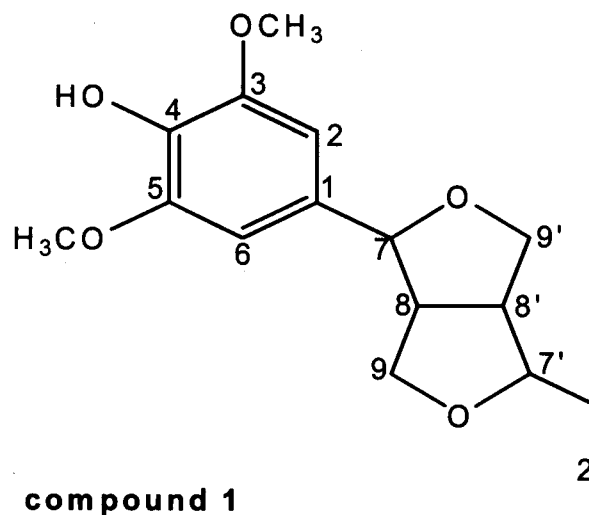


Fig. 1. Secondary metabolites from the silkworm droppings.