

산딸나무(*Cornus kousa* Burg.) 열매로부터 Triterpenoids 화합물의 분리 및
hACAT 저해 활성

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Triterpenoids from *Cornus kousa* Burg. and Their Inhibitory Activity on
hACAT-1, hACAT-2

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Objectives

Cornus kousa Burg. (Cornaceae) is a climbing plant distributed in the mountain of South Korea, China and Japan. The fruits of this plant has been used as hemostatic agent and for the treatment of diarrhea in Korean traditional medicine. This study describes the isolation of five triterpenoids, all of which were isolated for the first time from this plant. The inhibitory activity of the compounds against hACAT1 and hACAT2 were also evaluated.

Materials and Methods

○ Materials

The fruit of *Cornus kousa* was collected at the experimental farm in Kyung Hee University (KHU050914). The IR spectrum was obtained with a Perkin Elmer Spectrum One FT-IR spectrometer, CaF₂ window in MeOH (Buckinghamshire, England). EIMS data were recorded on a JEOL JMS-700 (Tokyo, Japan). ¹H-NMR (400 MHz), ¹³C-NMR (100 MHz) and 2D-NMR spectra were recorded on a Varian Unity Inova AS-400 FT-NMR spectrometer (California, USA).

○ Methods

The dried and chopped fruit of *C. kousa* (10 kg) were extracted with 80% aqueous MeOH at room temperature. The extracts were partitioned with water, EtOAc and *n*-BuOH, successively. Repeated column chromatography using silica gel, octadecyl silica gel (ODS) and Sephadex LH-20 for EtOAc fraction led to isolation of five triterpenoids. The activities of hACAT-1 and hACAT-2 were determined via the method developed by Brecher's and Chan's with some slight modifications.

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Results

From the EtOAc fraction, six triterpenoids were isolated through the repeated silica gel and ODS column chromatographies. According to the results of physico-chemical data including NMR, UV, MS and IR, the chemical structures of the compounds were determined as ursolic acid (1), corosolic acid (2), taraxasterol (3), tormentic acid (4) and betulinic aldehyde (5). They were the first to be isolated from *C. kousa*.

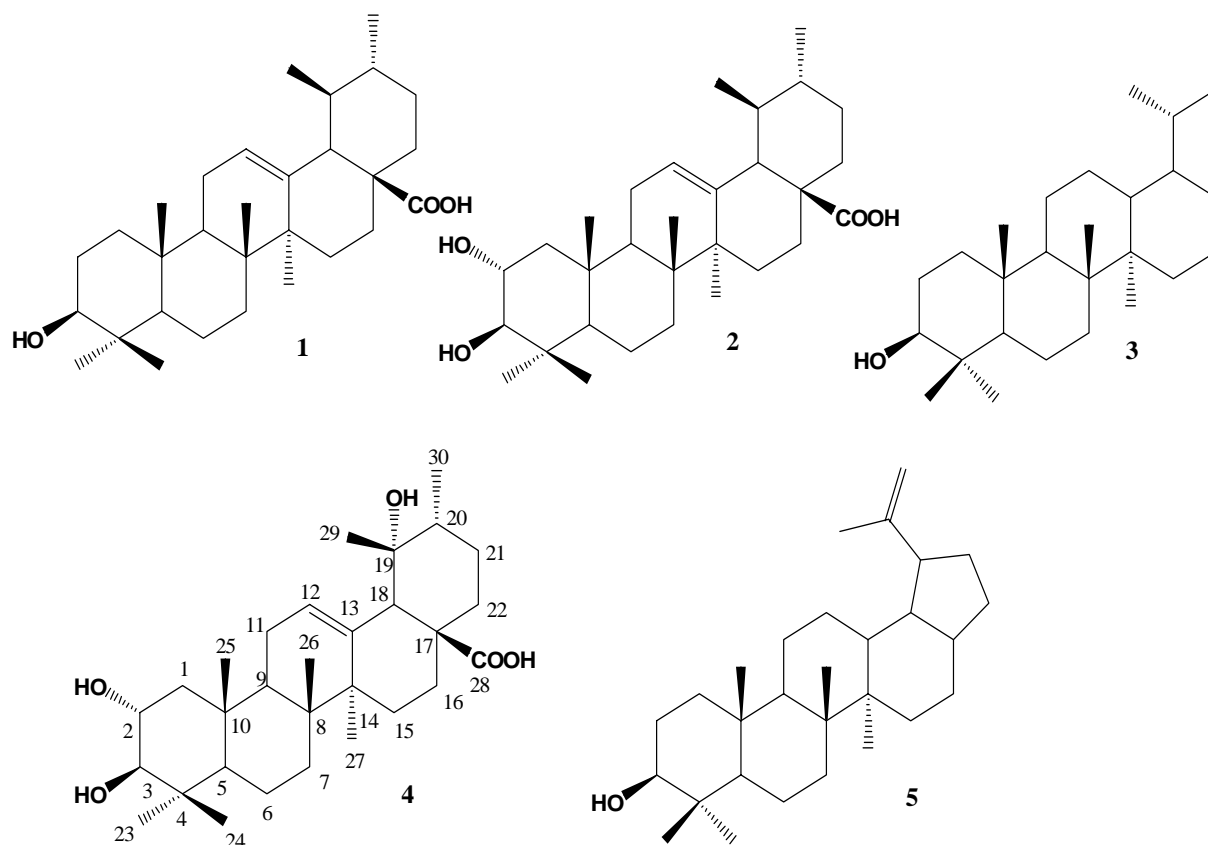


Figure 1. Chemical structure of isolated compounds from the fruits of *Cornus kousa*

Table 1. hACAT-1 and hACAT-2 inhibitory activities of compounds from the fruits of *Cornus kousa*

Compounds	Concentration	hACAT-1	hACAT-2
1	100 uM	52.8 ± 0.7 %	54.1 ± 0.3 %
2	100 uM	17.5 ± 6.0 %	13.7 ± 4.6 %
3	100 uM	91.1 ± 0.4 %	41.5 ± 1.5 %
4	100 uM	93.0 ± 0.7 %	81.9 ± 0.8 %
5	100 uM	95.2 ± 0.2 %	52.2 ± 2.4 %
Positive control oleic acid analide	100 uM	49 %	60 %