Supplementary data

Supplementary Figure S1. LC-low resolution-MS analyses of compound (I).

(A) Liquid chromatography-MS-TOF findings in total positive ion mode (upper) and UV absorbance at 254 nm (lower) of purified compound I. (B) Average mass spectrum from 12.939 to 13.489 min in chromatogram shown in (A). (C) LC-MS-TOF findings in total negative ion mode (upper) and UV absorbance at 254 nm (lower) of purified compound I. (D) Average mass spectrum from 13.222 to 13.603 in chromatogram shown in (C). These results were obtained before those shown in Figure 4. These findings confirmed that peaks in compound I can be detected in positive and negative modes and that the range of mass references for precise mass determination is 20–1,000.

Supplementary Figure S2. Replotted data of *Per2* and *Bmal1* oscillation in A9 cells.

Data shown in Figure 6 plotted against time show oscillation profiles of *Per2* and *Bmal1* genes in A9 cells incubated without (control, ethanol; A) and with (B) hydroxy-β-sanshool (9 μg/mL).

Supplementary Figure S3. Comparison of effects of hydroxy-α-sanshool and hydroxy-β-sanshool on circadian rhythmicity.

A9 cells harbouring *Bmal1*-SLR and *Per2*-Eluc promoter-reporters were incubated with various concentrations of authentic hydroxy-α-sanshool and hydroxy-β-sanshool, then period lengths of both genes were determined at each concentration. (A) and (B) respectively summarize the period lengths of *Per2* and *Bmal1*. Period was shortened by hydroxy-βsanshool, but not hydroxy-α-sanshool. C, control (ethanol); A2, and A10, hydroxy-α-sanshool 2 and 10 μg/mL, respectively; B2 and B10, hydroxy-β-sanshool 2 and 10 μg/mL, respectively.