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A TRITERPENOID AND PHENOLIC COMPOUNDS FROM *Myrica rubra* SEEDS

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Bayberry (*Myrica rubra* Sieb. et Zucc.), an evergreen tree widely distributed in eastern Asia, belongs to the family Myricaceae. In China, bayberry is cultivated as an economically important crop in south of the Yangtze River. The fruits of bayberry are spherical drupes, which are popular foods due to their containing rich nutritional components. The fleshes of fruits are usually eaten raw or processed into juice, wine, jam, and canned fruit, but the seeds are discarded as a byproduct without further utilization. Some studies about bayberry seeds have been done, which are mostly focused on the nutritional components of bayberry seeds such as protein, sugar, mineral, fat, and organic acid [1, 2], but the chemical constituents of bayberry seeds have not been investigated. In this work, twelve compounds were isolated from bayberry seeds. These compounds were characterized by NMR, MS, IR, and UV spectrum. Except for compounds **5** and **7**, the other ten compounds (**1–4**, **6** and **8–12**) were obtained for the first time from bayberry seeds.

Bayberry seeds were provided by Haitong Food Group Co. Ltd., Cixi, Zhejiang Province, China, which were the residual byproducts when bayberry fruits were processed for juice. These seeds were dried at ambient temperature and powdered using an electric grinder. The dried powders were stored at 4°C before use. The seed materials were identified as bayberry seeds by Dr. Xingqun Zhang from the College of Chemistry, Chemical Engineering, and Biotechnology, Donghua University, China. The powders of bayberry seeds (3 kg) were extracted with EtOH three times at room temperature. The solution was concentrated to obtain a residue (800 g). Then the residue was suspended in water and extracted four times with EtOAc and subsequently three times with *n*-BuOH to afford EtOAc extracts (80 g) and *n*-BuOH extracts (120 g), respectively. The EtOAc extract and the *n*-BuOH extract were subjected to a series of chromatographic techniques, such as silica gel column and Sephadex LH-20, yielding compounds **1–12**.

Arjunolic acid (**1**): $C_{30}H_{48}O_5$, white amorphous powder, mp 324–326°C. HR-MS *m/z* 488.3534 [3, 4].

(–)-Epigallocatechin-3-*O*-gallate (**2**): $C_{22}H_{18}O_{11}$, yellow amorphous powder, mp 214–216°C. FAB-MS *m/z* 459 $[M + H]^+$ [5].

Epigallocatechin (**3**): $C_{15}H_{14}O_7$, yellow amorphous powder, mp 216–218°C. ESI-MS *m/z* 307 $[M + H]^+$ [6].

Dihydromyricetin (**4**): $C_{15}H_{12}O_8$, dark-yellow amorphous powder, mp 342–344°C. ESI-MS *m/z* 321.3 $[M + H]^+$ [7].

Myricetin (**5**): $C_{15}H_{10}O_8$, dark-yellow crystal, mp 354–356°C. ESI-MS *m/z* 319 $[M + H]^+$. The ^{1}H NMR data were in agreement with [8].

Myricetin-3-*O*-β-D-glucuronide (**6**): $C_{21}H_{18}O_{14}$, yellow amorphous powder, ESI-MS *m/z* 493 $[M - H]^-$ [9].

Quercetin (**7**): $C_{15}H_{10}O_7$, yellow amorphous powder, mp 312–314°C. ESI-MS *m/z* 303 $[M + H]^+$. The ^{1}H NMR data were in agreement with references [10].

Rutin (**8**): $C_{27}H_{30}O_{16}$, yellow amorphous powder, mp 191–193°C. ESI-MS *m/z* 627.5 $[M + H]^+$ [11].

Quercetin-3-β-D-glucuronide (**9**): $C_{21}H_{18}O_{13}$, yellow amorphous powder, mp 186–188°C. ESI-MS *m/z* 479 $[M + H]^+$ and 501 $[M + Na]^+$ [12].

Leonuriside A (**10**): $C_{14}H_{20}O_9$, white amorphous powder, mp 235–237°C. ESI-MS *m/z* 333 $[M + H]^+$ [13].

Caffeic acid (**11**): $C_9H_8O_4$, yellow amorphous powder, mp 197–198°C. ESI-MS *m/z* 181 $[M + H]^+$ [14].

Gallic acid (**12**): $C_7H_6O_5$, white amorphous powder, mp 236–238°C. ESI-MS *m/z* 171.1 $[M + H]^+$ [15].

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