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Bioactive natural product exploration of Indonesian moraceous plants

About 30,000 species of plants are distributed in Indonesia and 940 species among these had been used for health care, even though only 120 species of which are involved in Indonesian natural medicines. Over the centuries, the use of medicinal plants has become an important part of daily life despite the progress in modern medical and pharmaceutical research. In connection with our continuing studies on Indonesian tropical plant, a phytochemical investigation of several families of plant has been undertaken in our laboratory, including Lauraceae, Dipterocarpaceae and Moraceae. From Lauracea family of plant, we isolated benzylisoquinoline alkaloid, 2-pyrone and lignan derivatives, while Dipterocarpaceae mostly contains stilbene oligomers. The Moraceae which is known as mulberry family comprising about 40 genera and over 1,000 species spread out in tropical and subtropical regions including Indonesia. *Morus*, *Artocarpus* and *Ficus* are the most important genera belonging to Moraceae family; these genera economically are valuable because of the quality of its timber and produce edible fruit. The leaves of *Morus* are very popular for feeding of silk worm (*Bombix mori*). Most of these species are used in traditional medicine in many places and well known as “sohakuhi” in Japan and “sangbaipi” in China. All parts of plant tissues of *Morus alba* species are reported to be used in folk medicine (leaf for hypertension, root bark for asthma, fruit for anemia and branch for arthritis). Chemical evaluation of *Artocarpus* showed mainly prenylated flavonoid with variety of modified skeleton which involved pyrano-, oxepino- and xanthone- rings. And phenolic compounds isolated from *Morus* mostly stilbenoid and arylbenzofurane derivatives in addition to flavonoid and Diels-Alder type adducts, have exhibited an interesting biological activity including anti-tumor activity. Development of root culture of *M. macroura* yielded mostly Diels-Alder type adduct compounds such as Chalcomoracin and Kuwanon J, while shoots culture of this species produce a prenylated chalcones namely morachalcone and isobavachalcone which are identified as dienophile founded in Diels-Alder type adduct of *Morus*. The root culture of *M. cathayana* afforded O-methylated Diels-Alder adduct compounds which were secreted to the media. Further investigation of enzyme which is responsible for the Diels-alder adducts production of *Morus* plant showed a promising data for combinatorial biosynthesis study. And recently we tried to explore endophyte microbe of *Morus*, from which some strains of fungi containing highly potential cytotoxic cytochalasins and few compounds of epiquinophomopsin derivatives were identified.

Biography

Euis H Hakim received a Bachelor's degree in Chemistry from Institut Teknologi Bandung (1980) and she joined the Natural Product research group of Professor Sjamsul Arifin Achmad at ITB. She received Master's degree (1989) and a PhD (1994) from the same university. She got a Research Fellowship at the University of Tokyo (1988), DSIR, New Zealand (1991), University of Western Australia (1992), and Post-doctoral research with Prof. Shigeo Iwasaki, the University of Tokyo (1996) and with Prof. Takeya at Tokyo University of Pharmacy & Life Science (2000). She is promoted to the position of Associate Professor in 2000 and as Full Professor in 2004.

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