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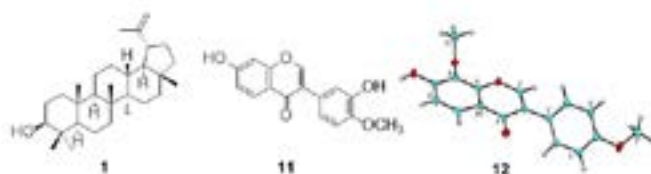
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Highly potent α -glucosidase inhibitors from *Pterocarpus indicus* and molecular docking studies

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The phytochemical investigation of *Pterocarpus indicus* stems led to isolation of twelve compounds (1-12), including two major triterpenoids, lupeol (1) and canophyllol (2), one quinone derivative, 2,6-dimethoxy-p-benzoquinone (3), three phenolic derivatives, vanillic acid (4), trans-4-hydroxymellein (5) and cis-4-hydroxymellein (6), six flavonoids that can be classified into two pterocarpin derivatives, (6 α R,11 α R)-medicarpin (7) and (6 α R,11 α R)-3,8-dihydroxy-9-methoxy pterocarpan (8), together with four isoflavones, afromosin (9), formononetin (10), clycosin (11) and 8-O-methylretusin (12), by comparing their NMR spectral data to those formerly published and assured through co-TLC with authentic samples (Figure 1). Moreover, the X-ray crystal structure of 12 has been reported for the first time. A major active compound (1) was derivatized to one new analogue (1d) and five known derivatives (1a-1c and 1e-1f). All isolated compounds (1-12) and modified analogues (1a-1f) were evaluated for their α -glucosidase activity. In this regard, compounds 1 and 11 exhibited potent inhibitory activity towards yeast α -glucosidase when compared to the positive control (acarbose). In addition, the α -glucosidase (maltase and sucrase) inhibitory activity of all compounds (1-12 and 1a-1f) was also evaluated. Only compound 11 showed moderate inhibitory activity towards rat intestinal α -glucosidase. The experimental results were also confirmed by docking analysis. From this study, these compounds have emerged as promising molecules for diabetic therapy.



Biography

Jirapast Sichaem has completed his PhD at the age of 26 years from Department of Chemistry, Faculty of Science, Chulalongkorn University, Thailand. He is a lecture at Department of Chemistry, Faculty of Science and Technology, Thammasat University, Thailand. He has his expertise in the field of cytotoxic, antioxidant, antidiabetic and anti-Alzheimer's compounds from Thai medicinal plants. He has published more than 30 papers in scientific journals.

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