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Enzyme inhibitors from the aril of *Myristica fragrans*S. Sathya^{a, b}, N.R. Amarasinghe^a , L. Jayasinghe^b , H. Araya^c, Y. Fujimoto^{b, c}

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Outline



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Highlights

- The aril of *Myristica fragrans* furnished malabaricone C, 3-(3-methyl-5-pentyl-2-furanyl)propenoic acid, licarin A, maceneolignan B and elemicin.
- Malabaricone C showed potent AChE inhibitory and antioxidant activities.
- α -Glucosidase inhibition of 3-(3-methyl-5-pentyl-2-furanyl)propenoic acid was first reported.
- The aril of *M. fragrans* was shown to be a good source of these enzyme inhibitors.

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Abstract

The fruit aril of *Myristica fragrans*, commonly known as “mace”, is a popular spice in worldwide. Chromatographic separation of the combined ethyl acetate (EtOAc) and the methanol (MeOH) extracts of the aril of *Myristica fragrans* furnished malabaricone C (**1**), 3-(3-methyl-5-pentyl-2-furanyl)-2(*E*)-propenoic acid (**2**), licarin A (**3**), maceneolignan B (**4**) and elemicin (**5**). Compounds

1–5 were screened for acetylcholinesterase (AChE), and α -glucosidase enzyme inhibitory activities and DPPH radical scavenging activity. Compound **1** showed the highest AChE inhibitory activity (IC_{50} 2.06 ± 0.04 $\mu\text{g/mL}$) and antioxidant activity (IC_{50} 6.56 ± 0.02 $\mu\text{g/mL}$) while compound **2** displayed the most potent α -glucosidase inhibitory activity (IC_{50} 50.91 ± 0.01 $\mu\text{g/mL}$). This is the first report of α -glucosidase inhibitory activity of **2**. Results indicate that the aril of *M. fragrans* showed good anticholinesterase and α -glucosidase inhibitory activities and antioxidant effect *in-vitro* that have a potential to be used as the treatment of Alzheimer's disease.

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Keywords

Enzyme inhibitors; Acetylcholinesterase; α -glucosidase; Antioxidants; Alzheimer's disease; *Myristica fragrans*

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