

DOCTORAL DISSERTATION

Topic of the dissertation:

“Study on botanical characters, chemical composition and the acetylcholinesterase inhibitory activity of *Piper thomsonii* (C. DC.) Hook. f. var. *thomsonii* and *Piper hymenophyllum* Miq., Piperaceae”

Specialization: Traditional Pharmacy **Code number:** 62.72.04.06

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Name of academic institute: Hanoi University of Pharmacy

Summary of new findings of the dissertation:

*** Botanical identification**

2 species of the genus *Piper* L. are identified as *Piper thomsonii* (C. DC.) Hook. f. var. *thomsonii* and *Piper hymenophyllum* Miq.

Their morphological and micro characters are also described.

*** Chemical composition**

14 compounds were isolated and their structures were also elucidated. 6 compounds were isolated from *Piper thomsonii* (C. DC.) Hook. f. var. *thomsonii* and 8 compounds were isolated from *Piper hymenophyllum* Miq. Among them, 3 new compounds have never been previously reported from nature (4-(2'-(Z)-decenyl)-phenol; 3,5-dimethoxy-4-hydroxycinnamoyl pyrrol và 3,4-dihydroxycinnamyl alcohol methyl ether); 4 other compounds were isolated from the genus *Piper* L. for the first time (2-methylbenzyl benzoat, cucumegastigman I, dihydromyricetin và *O*-methylmoscatolin). All of 14 compounds have never been previously isolated from 2 studied species.

*** Acetylcholinesterase inhibitory activity in vitro**

Some factors which affect the method of evaluating the acetylcholinesterase inhibitory activity were tested. Some suitable conditions for the *in vitro* experiment are determined including: ATCI solution (substrate) 2.4 mM, DTNB solution (reagent) 2.4 mM, acetylcholinesterase solution 0.25 IU/ml, incubation interval 15 minutes.

Total methanol extract and 4 fractions (*n*-hexane, chloroform, ethylacetate and butanol extracts) from each studied species were evaluated the acetylcholinesterase inhibitory activity. Four fractions, including: two *n*-hexane and ethylacetate extracts from *Piper thomsonii* (C. DC.) Hook. f. var. *thomsonii*; two chloroform and ethylacetate extracts from *Piper hymenophyllum* Miq. show the strongest activities. From these 4 fractions, 14 compounds were isolated and their acetylcholinesterase inhibitory activities were evaluated. Among them, neotaiwanensol B displays the strongest activity with $IC_{50}=14,46 \mu\text{M}$.

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