

ห้องสมุดงานวิจัย สำนักงานคณะกรรมการการวิจัยแห่งชาติ



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**TAXONOMY OF THE SPINOSE SPECIES IN THE MUSHROOM GENUS
MYCENA (MYCENACEAE) FROM
SOUTH EAST ASIA**

THITIYA BOONPRATUANG

**A THESIS PRESENTED TO RAMKHAMHAENG UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
(BIOLOGY)**

2008

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อนุกรมวิธานของเห็ดชนิด สไปโนส สกุล มายชีน่า (วงศ์มายชีนาซิอิ)
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Thesis Title Taxonomy of the Spinose Species in the
Mushroom Genus *Mycena* (Mycenaceae) from
South East Asia

Student's Name Miss Thitiya Boonpratuang

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ABSTRACT

Thesis Title	Taxonomy of the Spinose Species in the Mushroom Genus <i>Mycena</i> (Mycenaceae) from South East Asia
Student's Name	Miss Thitiya Boonpratuang
Degree Sought	Master of Science
Major	Biology
Academic Year	2008

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This taxonomic study of spinose species in the mushroom genus *Mycena* (Mycenaceae) from South East Asia was based on morphology and phylogenetic data. The morphological features were documented and compared with specimens at the international herbarium of San Francisco State University (SFSU). In addition, large subunit (LSU) ribosomal RNA gene (rDNA) sequences were obtained from 59 mushroom isolates and used for phylogenetic analyses. A key to the spinose species of the mushroom genus *Mycena* (Mycenaceae) from South East Asia was prepared together

with a phylogenetic tree showing their relationship to other *Mycena* species.

Altogether, 33 specimens were collected representing 13 species. This included five newly-discovered species from South East Asia that were formally described as *M. amyloseta*, *M. gracilipilosa*, *M. gracilisetosa*, *M. variicystis* and *M. volvata*.

Phylogenetic data were not robust enough to determine the taxonomic boundaries of the genus *Mycena sensu stricto* and no formal taxonomic recommendations at the generic rank were made in this study. As currently circumscribed, *Mycena* sect. *Longisetae* is not monophyletic based on phylogenetic analysis of the nuclear LSU dataset. Species with and without pileosetae belong to the same lineage. The oldest name available for this group is sect. *Sacchariferae*, suggesting that sect. *Longisetae* should be considered a synonym of sect. *Sacchariferae*. The topology of the phylogenetic tree indicates that *M. gracilisetosa* belongs to a lineage different from all other spinose species and represents either a different infrageneric taxon or a different genus. Until a broader sampling of *Mycena* species is included in a molecular phylogenetic analysis, the phylogenetic placement of *M. gracilisetosa* will remain elusive. The two known species, *M. clavulifera* and the new species, *M. volvata*, formed a monophyletic clade with 96% BS and 1.0 PP support, with *M. volvata* being a sister to two specimens of *M. clavulifera*. In addition, both collections of *M. clavulifera* and *M. volvata* were sympatric populations. *Mycena amicta* (A.H. Sm.) Maas Geest. appeared to be a sister to the spinose species of *Mycena* included in this study with high

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statistical support (100% BS, 1.0 PP), but this may have been due to limited sampling of the genus.

จากการศึกษาข้อมูลความสัมพันธ์เชิงวิวัฒนาการภายใน genus *Mycena* มีไม่มากพอที่จะนำมาอธิบายขอบเขตของ *Mycena sensu stricto* ได้ทั้ง genus ดังนั้นผลจากการศึกษาในครั้งนี้จึงไม่ตัดสินเรื่องของการแยกกลุ่มในระดับ genus จากการวิเคราะห์ข้อมูลความสัมพันธ์เชิงวิวัฒนาการลำดับเบสของ nLSU พบว่า *Mycena* sect. *Longisetae* ไม่เป็น monophyletic ส่วนข้อมูลของ species ที่พบและไม่พบ pileosetae ทั้งสองรวมอยู่ใน lineage เดียวกัน ซึ่งชื่อที่เก่าแก่ที่สุดของ lineage นี้คือ sect. *Sacchariferae* ดังนั้นเห็นสมควรที่จะพิจารณาให้ sect. *Longisetae* เป็น synonym ของ sect.

Sacchariferae และจาก Topology ของแผนภูมิต้นไม้ยังชี้ให้เห็นว่า *M. gracilisetosa* แยกออกจาก lineage ของเห็ดกลุ่ม สไปโนส อย่างชัดเจน ซึ่งควรจะพิจารณาแยกออกเป็น genus อื่นแต่เนื่องจากข้อมูลทางชีวโมเลกุลของความสัมพันธ์เชิงวิวัฒนาการมีไม่มากพอทำให้ *M. gracilisetosa* จึงยังควรรวมอยู่ในระดับ genus เดียวกัน นอกจากนั้นข้อมูลของ *M. clavulifera* และ *M. volvata* ซึ่งเป็นสอง species ที่รู้จักกันอย่างแพร่หลายนั้นจัดกลุ่มเป็น monophyletic clade ซึ่งมีข้อมูลรองรับถึง 96% BS และ 1.0 PP นอกจากนี้แล้วข้อมูลความสัมพันธ์เชิงวิวัฒนาการของ *M. volvata* แสดงให้เห็นว่ามีความสัมพันธ์อยู่ในระดับน้องกับ *M. clavulifera* และเป็น sympatric populations กัน แต่เนื่องจากข้อมูลที่นำมาวิเคราะห์ของ genus *Mycena* มีอยู่อย่างจำกัดทำให้ผลการวิเคราะห์ของ *Mycena amicta* (A.H. Sm.) Maas Geest., นั้นแสดงออกถึงความสัมพันธ์ระดับน้องกับเห็ดกลุ่ม สไปโนส (100% BS, 1.0 PP)

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Thitiya Boonpratuang

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