

ความหลากหลายทางชีวภาพและปัจจัยต่างๆ ที่มีอิทธิพลต่อการแพร่กระจายของไลเคนวงศ์ทริเพทีเลียซีอี
Biodiversity and the influences factor of distribution of the lichens family Trypetheliaceae
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บทคัดย่อ: ไลเคนวงศ์ทริเพทีเลียซีอีมีการแพร่กระจายอย่างกว้างขวางในเขตร้อน สำหรับพื้นที่ประเทศไทย มีการศึกษาโดยเก็บรวบรวมตัวอย่าง 559 ตัวอย่าง บนพรรณไม้ 63 ชนิด จากพื้นที่ศึกษา 26 แห่ง ใน 9 ระบบนิเวศ สามารถจำแนกไลเคนได้ 6 สกุล 38 ชนิด โดยประกอบด้วยสกุล *Trypethelium*, *Laurera*, *Polymeridium*, *Astrothelium*, *Campylothelium* และ *Pseudopyrenula* พบความหลากหลายชนิดร้อยละ 45, 26, 13, 8, 5 และ 3 ตามลำดับ และพบไลเคนไม่เคยมีรายงานในประเทศไทย 22 ชนิด ระบบนิเวศที่มีความหลากหลายชนิดมาก คือ บริเวณที่มีอุณหภูมิและความเข้มแสงต่ำ-ปานกลาง ได้แก่ ป่าดิบเขาและป่าดิบแล้ง สำหรับระบบนิเวศที่พบไลเคนวงศ์นี้ น้อย ได้แก่ ป่าชายเลน พื้นที่เกษตรกรรมและเขตชุมชน โดยปัจจัยสำคัญที่มีผลกระทบต่อความหลากหลายทางชีวภาพและการแพร่กระจาย ได้แก่ ชนิดป่าไม้ ชนิดพรรณไม้ที่ไลเคนอาศัย ผิวเปลือกไม้ ลักษณะภูมิอากาศเฉพาะแห่ง และ ความสูงจากระดับน้ำทะเล.

Abstract: The Trypetheliaceae are distributed widely in tropical regions. Bout Thailand, Corticolous lichen were collected 559 specimens, from 63 host tree species, from 26 site study and 9 ecosystems. Six genera and thirty-eight species were recognized. Of these, 45 % belong to *Trypethelium*, 26 % to *Laurera*, 13 % to *Polymeridium*, 8 % to *Astrothelium*, 5 % to *Campylothelium* and 3% to *Pseudopyrenula*. Twenty-two species were previously new record from Thailand. The species abundance can observed various ecosystems. The mostly diversity of Trypetheliaceae are highest in Low temperature and low – moderate light intensity e.g. hill evergreen forest and dry evergreen forest, whereas the mangroves forest, plantation and urban region have the lowest diversity of this family. The mainly influences are lichen diversity and distribution e.g. forest type, host trees, texture of bark, microclimate and elevation gradient.

Methodology: Lichens attached on barks were collected from various in Thailand. The samples were transferred to Ramkhamhaeng University Laboratory to prepare for herbarium preservation. The identification and classification were based on characters of morphology, anatomy and chemical constituent of the thallus and ascomata. The identification were carried out according to Awasthi (1991), Harris (1984, 1995), Makhija & Patwardhan (1993) and McCarthy (1995).

Results, Discussion and Conclusion: Although ecological sampling methods, such as quadrat, were not employed in this study, but species abundance of each genus can be observed from different ecosystems. The 38 species of the *Trypetheliaceae* in Thailand composes of 27 species occurred in the hill evergreen forests, 10 species in the dry dipterocarp forests, 4 species in the mixed deciduous forests, 18 species in the dry evergreen forests, 10 species in the tropical rain forests, 5 species in the reforestation areas, 4 species in the plantations and urban area and 2 species in the mangrove forests.

The hill evergreen forests and dry evergreen forest provide favorable condition for the Trypetheliaceae. The main characteristics of both forest are humid, low temperature and low-moderate light intensity. About the wet and shade habitat of the tropical rain forest are optimal conditions for plant growth throughout the years. Number of species of the Trypetheliaceae observed at this ecosystem is lesser than the two previously mentioned ecosystems. The dry and high temperature habitats in this study are represented by two forests, the mixed deciduous forests and the dry dipterocarp forests. Dominant species are *Laurera benguelensis*, *L. medreporiformis*, *L. subdiscreta* and *Trypethelium tropicum*.

The mangrove forest has high humid as well as high osmotic pressure from sea-salt aerosol. The vegetation is under water stress in this condition. The lichens, *Trypethelium tropicum* and *Polymeridium albidum* which survived in this environment should possess lichen substances or having unique physiological performance that enable them to survive under high osmotic pressure from sea-salt aerosol of the maritime influences. Tolerance of these lichens in mangrove forests require further investigation.

Lichens are sensitive to air pollution and easily disappear from the urban areas. Nevertheless, *Trypethelium eluteriae* have been recognized as inhabitants of the polluted cities. This species produced lichen products, that may present, probably play a significant role in protecting the lichens from adverse effects of the unfavorable condition.

Investigation, The bright yellow lichens, *Laurera benguelensis* and *Trypethelium eluteriae* were found in almost every forest type. They dominated in the dry dipterocarp forests. These species produced lichexanthone, parietin and various pigments, which may protect their thallus from ultraviolet irradiation, and bright light. The importance of secondary metabolites in protecting the photobiont from the harmful effects of high light intensity and ultraviolet irradiation are well-documented. However, other substances may be important to survival in different environment of various ecosystems.

The most favorite host species of the Trypetheliaceae was *Ternstroemia gymnanthera*, and lesser in *Peltophorum pterocarpum*, *Schima wallichii* and *Castanopsis sp.* Mostly species are growth on trees with smooth bark. Trees with rough bark were rarely found these lichens. In addition, thick bark with high moisture content and possibly high nutrient, such as barks of *Peltophorum pterocarpum*, are often found the Trypetheliaceae. The acidity of bark may influence germination of the Trypetheliaceae. About diversity of the Trypetheliaceae increase for 1-2 species in each level of 300 meter higher elevations.

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