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Patent Landscape of Aquilaria Species: Trends in Sustainable Agarwood Agribusiness Innovation

[Philippine Journal of Science](#) • Article • 2025 • DOI: 10.56899/154.6A.11

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Abstract

Aquilaria spp. is renowned for its fragrant, resin-impregnated wood, commonly known as agarwood, which is highly valued in the perfumery industry. Beyond this prized resin, the tree yields a wide range of materials – including leaves, fruits, seeds, flowers, oil, roots, branches, and hydrosol – many of which are being developed into consumer products. Despite its rich ethnobotanical history, strong market demand, and growing scientific interest, a gap remains between research and practical innovation. This study bridges that gap by analyzing 296 unique patents related to *Aquilaria* filed between 2010–2022 and drawn from Espacenet, WIPO PatentScope, Google Patents, and ASEAN Patentscope. Patent trends revealed that China leads global innovation, with most patents originating from companies and research institutes. Induction technologies (including high-pressure, fungal, and liquid methods) and therapeutic uses (notably anti-inflammatory and digestive-related applications) dominate the landscape. Beyond medicinal innovations, patents also highlight *Aquilaria*'s role in consumer products and sustainable cultivation. Notably, half of the

patents specify the inoculation status of the agarwood material used, a critical but inconsistently reported factor that affects downstream applications. Beyond tracking innovation, these findings spotlight Aquilaria’s untapped potential in pharmacology and consumer markets. They also underscore the urgent need to align commercialization with conservation, guiding stakeholders toward sustainable cultivation and agribusiness practices that secure both industry growth and the future of this endangered species. © 2025, Department of Science and Technology. All rights reserved.

Author keywords

agarwood; Aquilaria; innovations; medicinal; non-medicinal; patents

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
Fundamental Research Grant Scheme		
Ministry of Higher Education, Malaysia See opportunities by MOHE ↗	FRGS/1/2019/ WAB11/UIAM/02/4	MOHE

Funding text

This research study was financially supported by the Fundamental Research Grant Scheme (FRGS/1/2019/ WAB11/UIAM/02/4) provided by the Ministry of Higher Education of Malaysia.

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