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REVIEW ARTICLE

PHYTOCHEMICALS FROM *MYRISTICA DACTYLOIDES* GAERTNSaravanan Vivekanandarajah Sathasivampillai^{a*}, Pholtan Rajeev Sebastian Rajamanoharan^{b,c}, Sujarajini Varatharasan^d^a KnowledgeLink Group, Inc., Waltham, MA 02451, USA^b Eastern Provincial Herbal Garden Management Center, Trincomalee, Sri Lanka^c Department of Siddha Toxicology, The Tamil Nadu Dr. M.G.R. Medical University, Chennai, India^d Department of Biological Sciences, South Eastern University of Sri Lanka, Sammanthurai, Sri Lanka* Corresponding author Email: vivekanandarajahs@yahoo.co.uk

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ABSTRACT

Myristica dactyloides Gaertn. is an endemic plant species to Sri Lanka and it belongs to Myristicaceae family. *M. dactyloides* is a medicinal plant that is used to treat various illnesses in traditional medicine in Sri Lanka. There is no review published for *M. dactyloides*. Thus, this work aims summarize and present a comprehensive review including the phytochemistry of this plant species. This work would provide a foundation for further studying the phytochemistry and pharmacological activities of *M. dactyloides*. Web of Science (an electronic database) was utilized to identify relevant published work. A sum of 21 compounds have been found in various parts of *M. dactyloides* belong to classes like arylalkanone and lignan. More compounds were identified from stem bark. Compounds including Malabaricone A have been identified in both seed and stem bark. On the other hand, this is no scientific evidence available for any pharmacological activity study for ethnomedical uses. This work provides a basis for further studying the phytochemistry and pharmacological activities of this plant.

KEYWORDS

Myristica dactyloides, Myristicaceae, Sri Lanka.

1. INTRODUCTION

Myristica dactyloides Gaertn. is an endemic plant species to Sri Lanka. It is called as Kaattuch Chaathikkai (காட்டுச் சாதிக்காய்) in Tamil. *M. dactyloides* is a large tree and belongs to Myristicaceae family (Haridasan et al., 2014). Further, it is distributed in Sri Lanka and India. *M. dactyloides* is usually found in forests (Dassanayake, 2000; Jayaweera, 1982). Besides, this plant species has been identified as vulnerable and listed as a threatened species by the International Union for Conservation of Nature and Natural Resources (Haridasan et al., 2014). Decoctions prepared using leaf and bark of *M. dactyloides* are used to treat various illnesses in traditional medicine. This decoction is also used to treat throat diseases in Ayurveda Medicine in Sri Lanka (Jayaweera, 1982). Fruit and aril are utilized to treat fever, inflammation, insomnia, bronchitis, cough, wounds, skin ailments, burning sensations, indigestion, worms, and liver diseases in Siddha Medicine and Ayurveda (Haridasan et al., 2014).

2. AIMS AND OBJECTIVES

So far, there is no review published for *M. dactyloides*. This plant species is used to treat several disorders in traditional medicines in Sri Lanka. Thus, this work aims to summarize and present a comprehensive review of published phytochemistry related to studies of *M. dactyloides*. Therefore, this work would be useful by providing comprehensive information to

consider further investigating the phytochemistry and pharmacological activities of *M. dactyloides*.

3. MATERIALS AND METHODS

Web of Science (an electronic database) was employed to conduct a literature review from 1900 to August 2020. The term (binomial scientific name) *Myristica dactyloides* was used to identify the relevant published research articles.

4. RESULTS AND DISCUSSION

4.1 Phytochemistry

Overall, 21 compounds have been identified in various parts of *M. dactyloides* (Table 1) including dactyloidin, malabaricone A, 1-(2,6-dihydroxyphenyl)-9-(4-hydroxy-3-methoxyphenyl) nonan-1-one, 1-(2-methoxy-6-hydroxyphenyl)-9-(3',4'-methylenedioxyphenyl)-nonan-1-one, malabaricanol A, and myoinositol (Herath et al., 1998; Cooray et al., 1987; Bandara Herath and Anoma Priyadarshani, 1996; Kumar et al., 1988; Bandera Herath and Anoma Priyadarshini, 1997; Tillekeratne et al., 1981). These compounds belong to groups such as arylalkanone and lignan. Interestingly, all these investigations have been carried out in Sri Lanka. The majority of compounds have been isolated from stem bark. Further, a greater number of compounds have been identified in

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dichloromethane extract. Malabaricone A, Malabaricone B, and Malabaricone D were identified in both acetone seed extract and

dichloromethane stem bark extract (Cooray et al., 1987; Kumar et al., 1988).

Table 1: Compounds found in various parts of *M. dactyloides*

Part used	Extract	Identified compound	Reference
Root bark	Dichloromethane	Dactyloidin	Herath et al., 1998
Seed	Acetone	1-(2,6-dihydroxyphenyl)-9-(4-hydroxy-3-methoxyphenyl)nonan-1-one	Cooray et al., 1987
Seed	Acetone	1-(2,6-dihydroxyphenyl)tetradecan-1-one	Cooray et al., 1987
Seed	Acetone	Malabaricone A	Cooray et al., 1987
Seed	Acetone	Malabaricone B	Cooray et al., 1987
Seed	Acetone	Malabaricone C	Cooray et al., 1987
Seed	Acetone	Malabaricone D	Cooray et al., 1987
Stem bark	Hexane	1-(2,6-dihydroxyphenyl)-9-(4-hydroxy-3-methoxyphenyl)nonan-1-one	Bandara Herath and Anoma Priyadarshani (1996)
Stem bark	Dichloromethane	1-(2,6-dihydroxyphenyl)tetradecan-1-one	Kumar et al., 1988
Stem bark	Dichloromethane	1-(2-methoxy-6-hydroxyphenyl)-9-(3',4'-methylenedioxyphenyl)-nonan-1-one	Kumar et al., 1988
Stem bark	Dichloromethane	1-(2-methoxy-6-hydroxyphenyl)-9-(4'-hydroxyphenyl)-nonan-1-one	Kumar et al., 1988
Stem bark	Dichloromethane	1-(2-methoxy-6-hydroxyphenyl)tetradecan-1-one	Kumar et al., 1988
Stem bark	Dichloromethane	Malabaricanol A	Bandara Herath and Anoma Priyadarshani, 1997
Stem bark	Dichloromethane	Malabaricone A	Kumar et al., 1988
Stem bark	Dichloromethane	Malabaricone B	Kumar et al., 1988
Stem bark	Dichloromethane	Malabaricone D	Kumar et al., 1988
Stem bark	Methanol	Myoinositol	Tillekeratne et al., 1981
Stem bark	Hexane	rel-(8R,8'R)-dimethyl-(7S,7'R)-bis(3,4-methylenedioxyphenyl)tetrahydrofuran	Bandara Herath and Anoma Priyadarshani, 1996
Stem bark	Hexane	rel-(8S,8'R)-dimethyl-(7S,7'R)-bis(3,4-methylenedioxyphenyl)tetrahydrofuran	Bandara Herath and Anoma Priyadarshani, 1996
Stem bark	Hexane	rel-(8S,8'S)-bis(3,4-methylenedioxy)-8,8'-neolignan	Bandara Herath and Anoma Priyadarshani, 1997
Stem bark	Dichloromethane	rel-(8S,8'S)-dimethyl-(7S,7'S)-bis(4-hydroxy-3-methoxyphenyl)tetrahydrofuran	Bandara Herath and Anoma Priyadarshani, 1997

4.2 Pharmacological activities

As mentioned above, *M. dactyloides* is used to treat various illnesses in traditional medicinal systems. However, there is no scientific evidence was identified in this work to support these claims. Thus, it is recommended to consider studying its pharmacological activities in the future.

5. CONCLUSION

Several compounds have been identified in *M. dactyloides*. However, there is no scientific evidence for any pharmacological studies available. Therefore, this work summarizes and provides a foundation for further investigating the phytochemistry and pharmacological activities of this plant species by comprehensively presenting the published work.

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