

# Sirin Ratsamee luminescent mushroom (*Neonothopanus nambi*): upstream and downstream bio-product development for plant disease control

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## ABSTRACT:

A luminescent mushroom was found in Khok Phu Taka, Wiang Kao District, Khon Kaen Province, an area of the Plant Genetic Conservation Project under the royal initiative of Princess Maha Chakri Sirindhorn in 2003. This mushroom was studied in biology and its exploitation, especially in the biological control of plant diseases. The characterization and identification of the mushroom were conducted and resulted that it was *Neonothopanus nambi* (Speg.) R.H. Petersen & Krisai, which has been a new record of this luminous fungus in Thailand. Later in 2016, it was bestowed a Thai name from Princess Sirindhorn as “Hed Sirin Ratsamee”. The mushroom was tested focusing on biological control against the root-knot nematode (RKN), *Meloidogyne incognita* of tomato in laboratory and greenhouse conditions. The application of mushroom spawn of 10-30 g/plant before transplanting was effective to control RKN in tomatoes. The obtained knowledge was consequently registered a petty patent No. 5779. Bioactive compounds of *N. nambi* were extracted and identified by chemical methods. The sesquiterpenoid substances; Aurisin A, nambinone A, B, C, D, 1-epinambinone, axinysone, and a new compound Aurisin K were produced by this mushroom. However, Aurisin A was the major compound that affected the RKN, and also cancer cell lines. To extend the application of the mushroom for agricultural use, the Department of Agriculture (DOA) has researched on mass production and application of *N. nambi* to control plant diseases in some economic crops such as RKN of chili, potato, and cassava including the root rot disease of Durian. The farmers have been satisfied with the bioproduct of Sirin Ratsamee mushroom. Parallel to that application, the Aurisin A-Nano formulation was researched and developed by the KKU research team. It has shown the effectiveness against RKN of tomato. This Aurisin A-Nano formulation gives rise to intellectual property registration.

## KEYWORDS:

Aurisin A-Nano; Bioactive