Insect Pathogenic Fungi: A Marvel Source of Bioactive Molecules

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Insect pathogenic fungi infect the insect cuticle and, once inside their hosts, develop into a yeast-like form, producing metabolites that inhibit the insect immune system, modify insect behavior, or act as post-mortem antibiotics against competing microorganisms. After death, such fungi can revert to a filamentous form and digest the insect’s remaining internal organs, leaving only the chitin/protein exoskeleton.

The most well-known insect pathogenic fungi are members of the highly host-specific mega-genus *Cordyceps*, from which *Cordyceps sinensis* has been widely used in Chinese traditional medicine for more than 2000 years.

Thailand has proven to be a rich source of insect pathogenic fungi and it has been shown that fungi in this group, e.g. those belong to *Cordyceps, Beauveria, Paecilomyces, Hirsutella* species, are marvel sources of biologically active substances. Moreover, types and amounts of chemical constituents produced by a specific fungus strain can be entirely different depending upon the nutrients provided or technique employed during fermentation. Since the number of known species is only a small fraction of the estimated total number of the world’s fungi, it is not unreasonable to assume that research on insect fungi has a long way to go before reaching maturity.

Reference: