

Luminescence properties of 'non-luminous' mushrooms by the treatment of hispidin, a luciferin precursor

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Purpose: Currently about 100 species of bioluminescent fungi were recognized in the world. All bioluminescent species emit light at mycelial stage, and some of them do so at fruiting body stage. The luminescence has basically been recorded by chance at night observation in the wild, thus potential diversity has probably been overlooked. In this study, we searched potential luminous fungi species using the methods based on the bioluminescent reaction mechanism.

Methods: We used hispidin, which is a precursor of luciferin commonly used in fungal bioluminescence reaction, as a probe to screen the potential bioluminescent fungi. 200 μ M of hispidin aqueous solution containing 1% DMSO was dropped on the fruit body of freshly collected in wild, and observed the light emission by eyes and high sensitive camera.

Results and conclusions: By using this method, we newly identified three bioluminescent species, which has previously been known as non-luminescent. These three species have luminous mycelium but non-luminous fruiting body. As a result, the total number of luminescent fungi in Japan is 45 species at present.