Faculty of Science and Technology
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Search for functional materials from natural products, and their high functionalization

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Fig 1. The ostracod *Cypridina hilgendorfii*

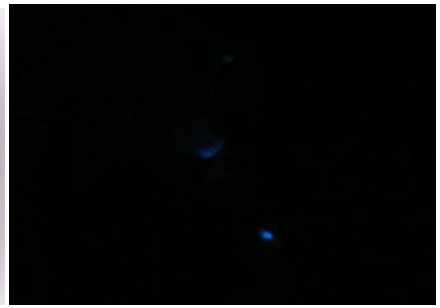

Fig 2. The light-emitting of *Cypridina hilgendorfii*

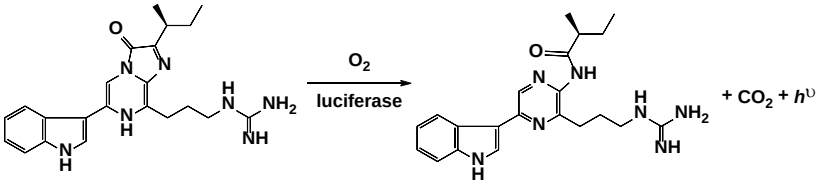

Fig 3. Luminescence reaction of Cypridina luciferase with Cypridina luciferin.

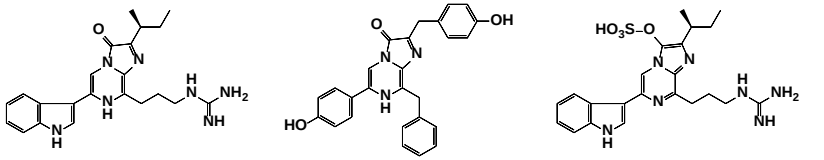

Fig 4. The chemical structures of Cypridina luciferin, coelenterazine and Cypridina luciferyl sulfate.

Content:

Chemical compounds produced by a living organism have various activities. These activities are useful for our life, like a medicine and a food additive.

In our research group, we have studied the biosynthesis of Cypridina luciferin. The luminescence of the ostracod *Cypridina hilgendorfii* (presently *Vargula hilgendorfii*) is produced by a luciferin-luciferase reaction in the presence of molecular oxygen. Cypridina luciferin is an imidazopyrazinone compound and is catalyzed by Cypridina luciferase to produce oxyluciferin, CO_2, and blue light (λmax = 460 nm). It has been reported that two imidazopyrazinone-type luciferins, Cypridina luciferin and coelenterazine, are biosynthesized from L-amino acids in living animals. During our studies on the biosynthesis of Cypridina luciferin, we found Cypridina luciferyl sulfate, which was more stable than Cypridina luciferin and might be a storage form of Cypridina luciferin.

Keywords: functional materials, bioorganic chemistry

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