Public Abstract

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Title: TAN B: A LONG WAVELENGTH FLUOROGENIC PROBE FOR THIAMINASE I ACTIVITY

Thiamine, known as Vitamin B₁, is one of the 9 essential Vitamins of the B-complex. It is water-soluble and involved in many cellular processes, such as in the biosynthesis of neurotransmitter. Thiamine deficiency may cause fatal outcomes such as Wernicke's encephalopathy in human, idiopathic paralytic disease in wild birds and EMS (Early Mortality Syndrome) in the predatory fish salmon in the Great Lakes. Deficiency of thiamine can be caused by excessive intake of thiaminase I, which is contained excessively in major forage fishes in the Great Lakes, is a transferase-type enzyme that can cleave thiamine. However, the occurrence of EMS in the Great Lakes is still not clear. In order to understand the pattern of EMS occurrence, methods for thiaminase I activity measurement are needed.

A radiometric assay was developed and has been dominant for nearly 30 years. However this assay is only available to laboratories equipped for radioactive material measurement and it is very expensive. Another assay is the 4-NTP colorimetric assays, but it suffers other limitations.

Due to the limitation of above two methods, it is necessary to measure thiaminase I by using a novel fluorescence method. *TanA* has proved to be an effective fluorescent probe. Based on this fact, we decided to improve the structure of the probe to obtain a better probe for thiaminase I activity with a longer wavelength in both UV absorption and fluorescence emission.