

UGM Students Research on New Testing Method to Detect Formalin

Thursday, 15 June 2017 WIB, By: Marwati



It may come as a shock that formalin is often used in the country as a preservative for various foods, such as tofu, noodles, and salted fish. Use of formalin as a food additive, however, has actually been banned by the government.

The prohibition is stated in The Minister of Health Regulation Number 22/Menkes/Per/IX/88 on Food Additive. The use of formalin as a food additive can cause respiratory problems, headache, nausea, digestive organs irritation, cancer, or even death.

Those issues encourage four chemistry students from Faculty of Mathematics and Natural Sciences UGM, namely Dadang Ovianto, Natasha Nur Fadilah, Firda Aulia'i Rahmani Ma'ruf, and Ida Bagus Alit Rai Sugiharta to conduct research on a chemical compound that can be used to detect formalin content in food. Under the supervision of Dr. Bambang Purwono, Ph.D., they had succeeded to synthesize and research the derivative compound of pyridine as a chemosensor.

"We use the derivative compound of pyridine because it can show various biological activities, such as antimalarial, antioxidant, antibacterial, and antiparasitic activities," said Danang Ovianto at

Faculty of Mathematics and Natural Sciences UGM on Thursday (15/6).

Danang said there is not much research on the derivative compound of pyridine as a chemosensor compound. Chemosensor is a compound that can be used as a sensor.

Meanwhile, the method used to detect formalin is by taking some of the samples and dipping it into a chemosensor compound solution. Initially, the solution has no color then the color will change into yellow.

The chemosensor can experience the alteration of its luminescence that can be observed by fluorescence. This method can be used both qualitatively and quantitatively.

“By recognizing the formalin content in food, the food that does not meet the requirements can be banned from being circulated,” said Danang.

Danang Ovianto feels grateful because this research is funded by the Ministry of Research, Technology, and Higher Education through the Students Creativity Programme on Exact Research (PKM-PE). According to Danang, the superiority of chemosensor compound in this research is we can observe the change of colors because of the formalin content while chemically it will form a stable, strong, and reversible structure.

“Moreover, it does not require heating and pH conditioning as well as other reagent additions. Therefore, this chemosensor can be used to detect formalin content in the sample in real time,” he added.

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