Extremely Exact "Freshness Checker" Freshness of Food Seen Simply and Fast

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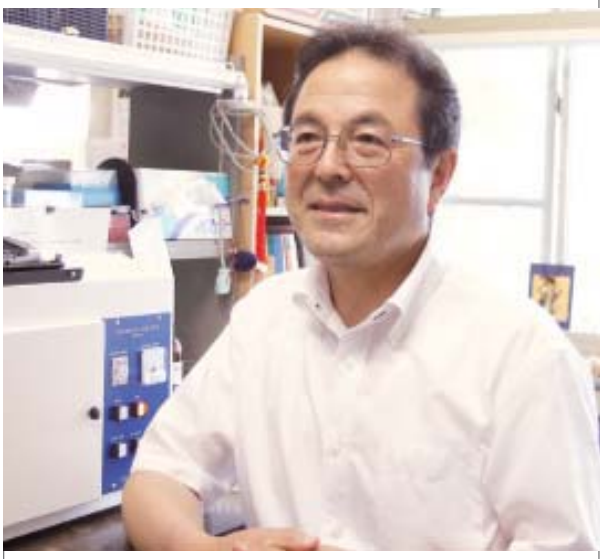
Born in 1948. Graduated from the Department of Fisheries, Faculty of Agriculture, Tohoku University. Worked for Nissin Food Products, Central Research Institute, School of Fisheries Sciences, Kitasato University as associate professor, and Faculty of Agriculture, Tohoku University as associate professor. In his current position since 1999. PhD in agricultural science. Appointed as advisory professor at Shanghai Fisheries University in 2001.



While consumers' interest in food safety and security has been increasing, this "freshness checker" enables measuring the freshness of food in approximate real-time.

Freshness is extremely important for the quality and safety of food. However, measurement has problems of accuracy, required time, and cost.

The freshness checker developed by Prof. Minoru Sato can check the freshness in approximately eight minutes. The checker is available for anything that contains cells including fresh fish, meat, and frozen or processed products. The checker measures substances, i.e., inosine and hypoxanthine, which are produced when a fish or an animal dies and loses freshness. When the ratio of the total of the two substances to the whole nucleotide related compounds (K value) is low, freshness is high. The flow of measurement of the K value is as follows: ①A drop of extract from fish or meat is spotted on filter paper, and DC electricity is applied there for five minutes. In this stage, the substances associated with nucleotide related compounds, contained in the spot, are divided into a group of acidic substances and a group of neutral substances, ②Ultraviolet rays are applied to the spot, and separated spot appears in blue (Fig. 1), and ③The spots are photographed by a digital camera, and the picture is processed by dedicated calculation software, and the K value is automatically indicated. A half century has passed since the idea of K value was proposed (i.e., Prof. Tsuneyuki Saito, Faculty of Fisheries, Hokkaido University, proposed K value measurement), however, nobody has conceived this method until now.

Prof. Sato had an opportunity to measure the freshness of tuna meat on a commission from the Fisheries Research Agency. The captain of a fishing boat asked him "Is there any way of measuring the K value on board?" It was a trigger for the development of this checker.

The freshness checker that shows the freshness index simply and fast on a scientific basis at any scene at low running cost can become a global standard.

Freshness checker that measures freshness simply and fast, is used in domestic and overseas fish markets, supermarkets, food processing industries, research institutes, universities.

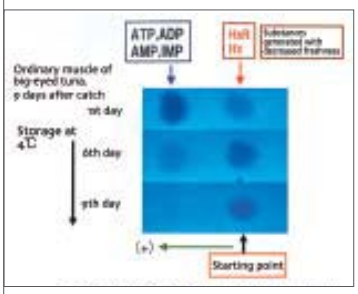


Fig. 1 Determination of freshness by means of electrophoresis (K value measurement)

Many students belong to this laboratory. A student from Peru is researching agar.

"I like to do home carpentry using a soldering iron etc. Having nothing in mind might help me create a new idea," said Prof. Sato. The first generation of freshness checker was made by himself, by painting black a piece of foam styrol in the laboratory, and setting it under an ultraviolet lamp.

http://www.agri.tohoku.ac.jp/suika/index-j.htm