

Development of Kansei Biosensor

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【Outline of survey】

Recently, a prompt establishment of objective evaluation method for taste, fragrance, quality, and safety of products is strongly demanded. The aim of our project is to establish the interaction between the developed artificial receptor membranes and molecules in relation to taste and odor which issue from chemical substances, and to clarify its mechanism. With a view of device manufacturing, the receptor membranes (the detection site) of taste sensor and odor sensor will be developed. Moreover, we also strive to develop the taste and odor measurement system which is miniaturized and easy-to-use.

This project is executed with separating into the following three themes.

1. The receptor membranes of the conventional taste sensing system will be developed with analyzing these surfaces; then, the condition of developing the receptor membranes for miniaturized taste sensor will be optimized.
2. With imitating the biological olfactory reception system, the development of odor sensor recognizing molecular information will be made to evaluate the odor quantitatively based on molecular information of the odor.
3. The evaluation system for taste and odor will be examined with combining the taste sensor and the odor sensor developed. In addition, selection of the substrate will also be examined in order to make the system easy-to-use.

【Expected results】

The results obtained from this project can apply to not only foods but also new medicines which suppress bitter taste. As olfactory and gustatory senses are known to be the perception for checking the security of foods, the development of the biosensors leads to ensuring the security. In addition, it can be expected that the development of these biosensors can contribute largely to realization of the system managing the traceability which can share the information anytime and anywhere in the current ubiquitous society.

【References by the principal researcher】

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- K. Toko, M. Habara, Chem. Senses, 30, 256-257, 2005.
- R. Izumi, K. Hayashi, K. Toko, Sens. Actuators B 99, 315-322, 2004.
- K. Toko, Applied Physics , 74 , 896-902, 2005.

【Term of project】 FY2006 - 2010

【Budget allocation】 27,900,000 yen

【Homepage address】

<http://ultrabio.ed.kyushu-u.ac.jp/tope.htm>