

Highly Sensitive Detection of Taste Substances Using Monolayer Lipid Membrane

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A monolayer membrane of thiol-containing lipid assembled on a gold electrode was obtained. Responses of the lipid-coated electrode to taste substances were investigated by cyclic voltammetry. Ability to block a redox reaction was altered by adsorption of taste substances to the monolayer membrane. Electrolytic taste substances promoted and nonelectrolytic substances suppressed the permeability of the membrane. The order of influence of the threshold values on the membrane was quinine < HCl < caffeine < Na-glutamate < NaCl < sucrose; the order was similar to that found in humans. These results indicate that the monolayer membrane of thiol-containing lipid is useful as a transducer of taste sensors, especially for nonelectrolytic taste substances.

1. Introduction

The measurement of taste with artificial sensors is essential for labor-saving and quality control in the food industry; however, the development of taste sensors is

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