

# Taste Sensing of Tomatoes with a Multichannel Taste Sensor

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The taste of tomatoes was studied using a multichannel taste sensor with lipid membranes as a transducer of taste substances. Different brands of tomatoes were easily distinguished by the output electric potential patterns. For quantification of the taste of tomatoes, the taste sensor was applied to commercial canned tomato juice, to which four basic taste substances had been added. Obtained data were analyzed by means of principal component analysis. The taste of several brands of tomatoes was expressed in terms of four basic taste qualities by projecting the data obtained from these tomatoes onto the principal axes. This expression agreed with human taste sensation.

## 1. Introduction

In biological taste reception, taste substances are received by the biological membrane of gustatory cells in taste buds on the tongue. Then the information on taste substances is transduced into an electric signal, which is transmitted along the nerve fiber to the brain, where the taste is perceived. Recently we developed a multichannel taste sensor whose transducer is composed of lipid membranes.<sup>(1,2)</sup> This sensor can detect tastes in a manner similar to human gustatory sensation. The output of the sensor is not the amount of taste substances but the taste quality (and also magnitude), because different output patterns were obtained for different taste groups such as sourness and saltiness. On the other hand, similar patterns were ob-

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