

# Electrochemical Characteristics of *Streptococcus Mutans* and Effects of TiO<sub>2</sub> Powder

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(Received September 26, 1991; accepted November 1, 1991)

**Key words:** *Streptococcus mutans*, antibacterial effect, photocatalyst, electrochemistry, TiO<sub>2</sub> powder, Ingbritt, NCTC 10449, GS-5, coenzyme A

Electrochemical characteristics of several kinds of *Streptococcus mutans* have been studied. The examined *Streptococcus mutans* showed irreversible oxidation current at about 0.7–0.8 V vs Ag/AgCl in aqueous neutral buffer solution. The oxidation potentials and currents depended on the pH value of the electrolyte solution. Specific adsorption behavior of the microorganisms on the surface of In–Sn oxide electrode was observed. Addition of TiO<sub>2</sub> powder to the electrolyte solution resulted in suppression of the anodic peak and decrease in the number of microorganisms existing in the electrolyte solution.

## 1. Introduction

Recently, electrochemical behavior of a microbe cell has attracted considerable attention from both practical and fundamental viewpoints. The electrochemical signals of the microbe cell can be used for detection of the kind of cell existing in the test solution and its concentration, resulting in practical applications such as bioelectrochemical sensors.<sup>(1-3)</sup> The mechanism of the electrode reaction has been discussed because it is of fundamental interest.<sup>(4)</sup> The interest in the early works of Matsunaga