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Rapid and accurate detection of sucralose in solution

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BACKGROUND

Detection of sucralose (also known under its trade name Splenda®), particularly in food and beverages, is slow and involves the use of complex instrumentation. Current techniques involve high pressure liquid chromatography and/or mass spectrometry. Use of these techniques is not commercially viable. Producers want rapid and accurate responses - resulting in some producers determining sucralose concentration by taste alone.

TECHNOLOGY DESCRIPTION

An interdisciplinary collaboration of UC Santa Cruz researchers has developed an electrode based test that can accurately provide sucralose concentrations in a sample solution in under 5 seconds. The key to this breakthrough is a screen printed electrode made up of a metal oxide and a metal (such as a dielectric metal) that can perform high efficiency electrooxidation of sucralose. The team has tested two electrodes to date: one a copper oxide electrode and the other a platinum wire electrode which are capable of linear detection of sucralose up to 25 nM and 75 nM respectively.

The electrode is designed to be used in conjunction with a hand-held device that displays the sucralose concentration numerically.

The system can be adapted for the detection of other carbohydrates as well as sucralose.

APPLICATIONS

Applications include:

- ▶ Quality control testing in the food and beverage industry
- ▶ Testing of groundwater for human waste - sucralose does not break down in the environment and its presence in water is indicative of the presence of human waste
- ▶ Testing for intestinal permeability - the presence of sucralose in the urine of an individual who has previously ingested sucralose is an indication of intestinal permeability.

ADVANTAGES

No other rapid tests for measuring sucralose are available.

Simple, inexpensive instrumentation

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Simple and Rapid Method for the Quantification of Halogenated Dissaccharides \(i.e. Sucralose\) in an Aqueous Media](#)
- ▶ [Producing aluminum oxide \(alumina\) from reaction of a gallium/aluminum alloy with water](#)
- ▶ [Biodiesel Made Easy](#)
- ▶ [Fluorescence Assay For Intestinal Permeability](#)

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OTHER INFORMATION

KEYWORDS

sucralose, Splenda(R), sucralose detection, rapid sucralose detection, gut permeability, electrode, electrooxidation, screen printed electrode, water quality testing, quality control, food and beverage

CATEGORIZED AS

- ▶ **Sensors & Instrumentation**
 - ▶ Analytical
 - ▶ Environmental Sensors

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