VCU Innovation Gateway
Office of the Vice President for Research and Innovation

Wireless & Implantable Taste System

A device for those with an impaired or loss sense of taste

The sense of taste is affected by many factors, these include age, disease and substances. For individuals with impaired taste, some or all taste (sweet, salty, bitter, sour, and umami) can be affected. Impaired taste can prevent the detection of salt or sugar, which can cause loss of appetite and unintended weight loss. This can also affect individuals who need to manage conditions such as diabetes, hypertension, and other metabolic diseases. While the oral cavity contains many chemicals and chemical compounds that can be detected and quantified to help an individual better monitor their food consumption, there are currently no devices available to the general public to do so. As a result, researchers at Virginia Commonwealth University have developed an electronic device to detect and monitor concentrations of chemical molecules (tastants) present in the oral cavity.

The technology

The system consists of an ultrathin, flexible, and stretchable electronic device that is positioned in the oral cavity. The device incorporates electrochemical sensors that detect chemicals and their concentrations, and can be further integrated with a removable maxillary appliance for insertion. The recorded electrochemical data is then relayed in real time onto a mobile device where it is processed to trigger alerts set for/by the individual to monitor intakes such as salt or sugar. Currently designed to fit on an orthodontic retainer, it can be housed on other dental implants, such as artificial tooth or dentures. In addition to measuring sugar and salt for patients with diabetes and hypertension, it may be possible to modify the device for oral health assessment, medication administration and disease progression.

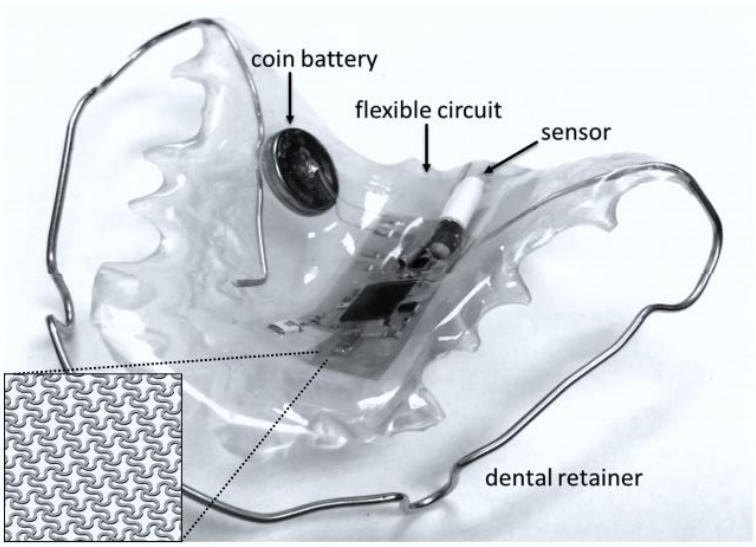

Figure 1. An embodiment of the intra-oral device comprising at least one sensor to detect one type of tastant.

Benefits

- Automated sensing
- Removable
- Flexible
- Multiple mounts
- Real-time monitoring

Applications

- Impaired gustatory
- Oral health assessment
- Medication administration
- Disease progression
- Salt/sugar intake monitor

Patent status:
Patent issued: US 2017/0087363 A1

License status:
This technology is available for licensing to industry for further development and commercialization.

Category:
Biomedical

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