In vitro Assay for Bitter taste Detection and Modulation

Many active pharmaceutical ingredients taste bitter and are thus aversive to children, many adults and animals, who may fail to comply with medication and complete their treatment. Encapsulation of bitter components is not an effective solution for children or anyone who has difficulties swallowing solid dose forms. The use of sugars or acids as taste-masking ingredients in paediatric formulations can lead to tooth erosion and decay.

Scientists at the University of Vienna have developed a novel in vitro cell-based assay that accurately assesses bitter taste without the need for tests in animal models. The assay allows screening of new pharmaceutical drug candidates for bitter taste during the early stages of development, and can also be used to screen and identify substances that efficiently modulate the bitter taste of APIs so that existing formulations can be improved.

Applications

- Bitter taste screening of pharmaceutical drug candidates during early drug development
- Screening for substances that can reduce or modulate the bitter taste of existing medications (“bitter blockers”)
- Screening for substances that can enhance the bitter taste of potentially harmful substances or formulations to deter human consumption
- Screening pharmaceutical drug candidates for effects on stomach acid secretion
- Screening for substances that inhibit stomach acid secretion experienced as an unwanted side-effect of existing medications
Advantages

- Crude behavioural assays in animal models are redundant
- Superior to artificial sensor systems ("electronic tongues"), which lack the complexity of a biological system
- Accurately, consistently and specifically identifies degree of bitter taste using spectrometry
- Excellent correlation with human taste perception
- Provides an objective measurement of bitterness that can be used for direct comparison of substances or formulations
- Easy to set up
- Results are available very quickly
- Can be used for High-Throughput Screening (HTS)

Development Status

The Assay has been validated, and has been used successfully to identify bitter-modulating substances.

Intellectual property Status

The national phase of PCT application WO 2014/111546 has been entered in the US and before the European Patent Office.

Publications

In preparation


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