Molecular and computational biochemistry in the hunt for the real cola taste without sugar

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Obesity keeps climbing its way to levels of incidence and severity of alarming consequences for the global community. Humans often try to deal with complex problems by taking simplistic approaches such as blaming the use of refined sugars to be responsible for the obesity pandemic. Food industries face the need to respond to increasing consumer demands related to low calorie yet fully flavoured foods. For example, soda manufacturers have been long battling to find the perfect sweet taste without addition of sugar. However, to date, none of the so-called non-calorie sweeteners have a clean pure sugar taste. The advent of the genomic era with novel user friendly bioinformatic tools has pushed the hunt into molecular and computational battlefields. As a result, there have been very significant advances in our knowledge on taste sensing mechanisms at a molecular level. In addition, an array of new taste-active molecules is starting to appear in the market craving for fame and fortune. From sweet and umami orthosteric agonists and allosteric enhancers to bitter blockers the seminar will review our current understanding of the molecular mechanisms of taste perception and potential implications relevant to human nutrition and food science.