

THE CHEMISTRY OF FOOD FLAVOURS: SIMPLY PLEASURE OR BEYOND?

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During eating, a distinct set of food constituents induces a pattern of neural activity in the human olfactory and gustatory systems. However, we all know by experience that the complex neural patterns generated at the receptor sites on the tongue and in the nose are finally “translated” by our brain into a simple perception telling us the overall flavor quality of a food. However, although thousands of food constituents have already been identified, only a few studies have attempted to clarify the chemical background of food flavor perception. The concept of Sensomics, developed by our group, allows one to decode the blueprint of those genuine key flavor compounds able to interact with the odorant receptors during food consumption. This interaction with the peripheral receptors renders bioactivity to odorants as well as to tastants. However, interestingly, for certain food constituents, besides flavor properties, other “bioactivities” have been reported, such as effects on behavior, mood, satiety and also, human health. Using comfort foods as examples, in the first part of the lecture, methods how to unravel complex food flavors by breaking down the overall flavor sensation into single, “chemical” responses will be presented, followed by approaches how to use this knowledge in chemistry to improve the quality of the respective food. In the second part of the talk, recent results are discussed with special emphasis on compounds displaying flavor activity as well as postprandial bioactivity in the human body. The talk will, thus, include data on the fate of aroma compounds in the human body as well as on “flavor perception” in other human tissues.