Basic taste solutions give sensory perception of saltiness, sourness, bitterness, sweetness and umami via taste receptors in the mouth and throat [1]. Taste solutions also reveal specific facial reactions [2, 3, 4] these have been shown to be innate and to remain into adulthood [5]. Also, preference for sweetness and disgust for bitterness have been shown to be innate. Reactions toward water have been described as neutral [6, 7]. A taste solution's sensory quality cannot be distinguished by facial reactions alone [8], but can be characterised by sensory analysis. However, facial expressions may also give additional information, e.g. emotional, of the subject to the stimulus. The aim of this study was to explore relationships between perception (intensity and pleasantness) of basic taste solutions in different concentrations and facial reactions.

Basic taste solutions of sucrose, sodium chloride, caffeine, citric acid and sodium glutamate monohydrate in three levels each plus pure water were served (three replicates) to an analytical panel, selected according to ISO [9]. For each sample the panellists identified the taste and intensity as well as pleasantness using a 9-point scale. The panellists were filmed while tasting and their facial reactions were coded and analysed. The analysed facial reactions were selected from FACS [8]. All data were statistically analysed.

The intensity of most facial reactions to the basic tastes increased with increasing stimulus concentration, most pronounced for sourness (lips) and bitterness (eyes and forehead). For bitterness some of the reactions decreased with increasing stimuli concentration. Pleasantness ratings decreased with increasing concentration of all basic tastes. Low and medium sweet solutions as well as pure water were perceived as the most pleasant samples, these samples revealed lowest intensity of facial reactions. In line with our results earlier studies found that intense facial reactions were correlated to low pleasantness [10, 11].

Keywords: basic taste, sensory perception, facial reaction, pleasantness

References


