10:45 - 11:00

O10.2 What's behind the differences in sensory responsiveness to oral stimuli in real foods? A possible link with oral and gut microbiota

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Abstract

Emerging evidence has drawn attention towards a role of the gastrointestinal microbiota in affecting sensory perception. Nevertheless, the commonly reported assessing of sensory perception via aqueous solutions combined with profiling only the oral microbiota lowers the ecological validity of outcomes. Thus, this contribution aimed at assessing the associations between sensory responsiveness to real foods, oral and gut microbiota.

One hundred healthy participants (52 % female, 18-30 yo) remotely attended a 4-day (D-) lasting protocol, and rated liking (LAM scale; D-2) and sensory responsiveness (gLMS scale; D-4) for 5 liquid and 5 solid commercially available foods, each selected to elicit a target taste (sweet, sour, bitter, salty) or sensation (pungent). Participants also completed a battery of psychological questionnaires (D-3), a 4-day dietary record (D-1 to D-4), and provided one saliva and one stool sample (D-4) for microbial composition profiling by 16S rRNA gene sequencing.

Using a data-driven segmentation approach based on basic tastes/sensation cumulative scores, we identified two distinct taste profile groups, which differed for their responsiveness to bitterness and pungency (Low-BP, High-BP). High-BP reported enhanced responsiveness to bitterness and pungency and expressed lower liking ratings for both liquid and solid BP foods. High-BP also showed higher neophobic traits, less general health interests, and consumed habitually lower amounts of fibre and vegetal proteins. Interestingly, several dysbiotic taxa were more abundant in the oral (e.g., *Bifidobacterium*) and gut (e.g., *Shuttleworthia*) microbiota of High-BP, while Low-BP harbored higher abundances of beneficial oral (e.g., *Roseburia*) and gut (e.g., *Eubacterium_xylanophilum_group*) microbes, with known plant polysaccharide degrading activities.

Our findings suggest that differences in sensory responsiveness to warning sensations correspond to differences in the oral and gut microbiota composition, thus paving the way for unravelling the complex interplay between host-related non-genetic factors and behaviour.

Keywords

Oral responsiveness
Oral microbiota
Gut microbiota
Food choices