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## The impact of herbs and spices on the appreciation of low-salt legume-based dishes

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### Abstract

**Introduction:** Despite the well-documented health benefits of a dietary pattern higher in plant-based food such as legumes, their consumption remains low. Knowing that taste is the first factor in consumers' food choice, flavoring of legumes using blends of herbs and spices (H&S) is an interesting approach to increase their consumption. This study examines the effect of H&S on the appreciation and energy intake of low salt legume-based dishes in a real context ecological environment.

**Materials and Methods:** A 2-step pilot testing was designed to determine the most favorable recipe between 4 different blends of H&S. Firstly, 4 recipes were evaluated in a balanced order of presentation using different blends of legumes (chickpeas and lentils) and H&S by 115 participants (age 18–35) in an experimental restaurant. Overall liking was measured, followed by a preference-ranking test. Secondly, a perception assessment test was performed (n = 54) with the preferred recipe being divided into 4 variants higher (S) or lower in salt (LS) and H&S (S, LS, LSHS, SHS), according to a 2×2 factorial design (2-AFC test). In a randomized cross-over trial, 94 participants (age 18–35) attended 4 sessions 1 week apart and received the 4 variants as a mezze-type starter. Overall liking, food intake and appetite ratings (VAS) were assessed before and after the starter, main dish and dessert during lunch.

**Results:** Participants significantly preferred the Spinach recipe compared with the Ginger, Paprika and Curcuma recipes and they could easily determine the different levels for salt and spices (t-test 5%). There were no significant differences in overall liking and taste between the different levels of salt and spiciness, although Principal Component Analysis showed 55% of the participants rating higher scores for the H&S recipes. Similarly, there were no differences in energy intake between S, LS, LSHS, SHS or total energy intake of the complete lunch. There was no difference in the ratings of hunger, desire to eat and prospective consumption although fullness was significantly higher followed by the S compared with LSHS (P < 0.005).

**Discussion:** Overall appreciation was similar after the addition of H&S in low-salt starter to the high-salt starters, implying that reducing salt content without compromising acceptance is a feasible strategy at an ecological setting. However, there was no difference in energy intake of the four variants and overall appetite ratings. Further analysis, on interindividual differences in terms of eating behavior and acceptance, seems prudent.

### Conflict of Interest

There is no conflict of interest