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Sensory characterization of the “Calçot” (*Allium cepa* L.), a necessary step for its breeding

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Calçots are second-year onion sprouts that will give rise to the flower stems. These edible sprouts, coming from the variety “Ceba Blanca Tardana de Lleida” (CBTL), are harvested in winter, when their edible part reaches a size of about 2 cm in diameter x 25 cm in height, and eaten grilled with a special sauce in northeast Spain. This tradition, dating from the 1930s, has grown popular and now represents a twenty-million-euro business.

A sensory panel of consumers determined that the ideal **calçot** should be sweet, little fibrous and no off flavors.

To advance sensory variability studies and breeding programs, we elaborated a standard protocol for sample preparation (also applicable to other cooked *Allium* sp). After the green part of the **calçot's** leaves is eliminated leaving only the white portion of the sprout, they are cooked in an oven at 270°C for 18 minutes. Then, 50 **calçots** from the same entry are puréed together to provide a representative sample. The results of sensory tests on the resultant purée correlated very well for all traits (minimum $r=0.78$, significant $p\leq 0.05$) with those on whole **calçots**. Thus, using purée makes it possible to prepare identical samples that are very representative of each entry for each judge to evaluate.

Twelve panelists were trained to evaluate samples using semi-structured scales ranging from 0 to 10 with the extremes labeled for sweetness, fibrous perception, and off flavors. Afterwards, the panel evaluated **calçots** produced from 14 Spanish onion varieties and 8 CBTL entries, managing to differentiate among genotypes for all traits. The lack of significant panelist x genotype effects ($p\leq 0.05$) reinforces the reliability of the panel.

As expected, the variety closest to the ideotype was the CBTL. However, the genetic variability detected within CBTL shows that there is much room for breeding in the sensory traits of this product.

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