

## The Effect of Cooking on the Sensory Properties of *Portulacaria Afra* Samples by Using the Check-All-That-Apply (CATA) Test

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### Abstract

Southern Africa faces the challenge of undernourishment, biodiversity loss, and environmental degradation, leaving the poor vulnerable to food insecurity. Given this, the future of food security is in jeopardy. Therefore, Southern Africa must adopt an inclusive, sustainable food system that supports food security, even under harsh climatic conditions. Wild edible plants have the potential to strengthen the South African diet, as they are nutritious, freely available and adapted to survive marginal conditions.

The *Portulacaria afra*, colloquially known as spekboom, is an indigenous succulent to South Africa. This edible plant can be valuable, as it is resilient even when exposed to weather extremes. The taste of spekboom leaves could be described as pleasantly sour or tart. The spekboom can contribute to food security and be a new ingredient, but it awaits culinary development to proliferate its consumption among consumers.

Spekboom curd was developed; it is a sweet, zesty filling for cakes and tarts, which was tested in the sensory labs (UFS). The sensory consumer panel consisted of 50 UFS staff members and students, of which 66% were female and 36% were younger than 35 years of age. The consumers evaluated four product attributes: appearance, aroma, mouthfeel, and taste on a five-point JAR scale and overall acceptability task on the 9-point hedonic scale. The Tukey-HSD test and ANOVA were applied to the data. Consumers' overall acceptability test showed 6.80 = like slightly. The correlations indicated that the aroma was moderately negative with acceptability (-0.423), the taste was weak positive with appearance (0.342), and weak negative with the mouthfeel. Mouthfeel had a weak positive acceptability (0.298). The taste was JAR (76.0%) (above 75%), while the mouthfeel was almost JAR (72.0%). However, the aroma was too lemony and too bland, and the colour was too yellow (26%). Thus, the aroma and yellow colour had to be adjusted during the product's reformulation.

*P. afra* was successfully used in product development to substitute lemon juice. The Spekboom leaves have the potential as a new ingredient and crop in Africa.