Measuring panel performance in thawed bonito (Thunnus alalunga). Statistical application with R

INTRODUCTION

Sensory analysis of food products is a useful tool to evaluate consumer preferences and product quality. The bonito is a tuna species common in the northern Atlantic (Thunnus alalunga) and it is the most used species in Spanish canned food industry. The bonito is typically sold raw and cooked.

However, those assessors who showed significant differences were retrained in order to improve panel performance. It can be conclude that ANOVA test alone is insufficient to analyse panel performance and it is necessary to make a deeper statistical study. This methodology is a good way to measure panel performance and to identify assessors whose performance needs to be corrected.

RESULTS

The following results were obtained:

Concordance
ANOVA test showed that there were significant differences between the scores of the assessors (Table 1). However, correlations between the scores of all assessors and the mean of the group were high or very high after performing Pearson’s correlation test (Table 2).

Consistency
In the ANOVA test there was significant effect of the interaction assessor vs. session in several cases (Table 1). Nevertheless, no significant differences between assessors were found after performing Friedman analysis and LSD Fisher Test (Table 3).

Use of the scale
Three groups were determined applying Friedman analysis and LSD Fisher Test. “Group a” agglutinates assessors who use the whole scale to evaluate samples, “group b” assessors who use just a small portion of the scale and “group ab” assessors showing an intermediate use of the scale (Table 3).

Precision
Finally, it was observed that groups that appeared in the evaluation of the use of the scale were exactly the same as observed after analysing precision of the panel. “Group a” put together less accurate assessors, “group b” assessors who make a more precise judgement and “group ab” assessors showing an intermediate precision in their evaluations (Table 3).

Use of the scale and precision were mutually related, so assessors who made a restricted use of the scale were the most accurate ones whereas those who used the whole scale turned out to be the least precise.

CONCLUSION

The results showed that, overall, the panel is highly qualified for sensory analysis of bonito. Nevertheless, those assessors who showed significant differences were retrained in order to improve panel performance.

REFERENCES

