INACTIVE RYE SOURDOUGHS: EFFECTS ON TEXTURE AND ACCEPTABILITY OF SALT-FREE BREAD

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Introduction. Reducing sodium in bakery products remains a central objective in developing healthier staple foods, especially as public health recommendations increasingly emphasize lowering salt intake [1].

Materials and Methods. In this context, the present study investigates the technological and sensory impact of incorporating two inactive rye sourdoughs, Sapore Othello (SO) and Sapore Traviata (ST) at levels of 1-4% into a standard wheat bread formulation produced entirely without added salt. The goal was to determine whether these ingredients could compensate for the absence of salt by enhancing flavor perception and improving structural attributes. Bread samples were produced under controlled mixing, fermentation, and baking conditions to ensure consistency. Sensory evaluation using a 9-point hedonic scale showed a clear increase in acceptability for all sourdough-containing samples compared with the salt-free control. The highest overall liking score was obtained for ST_4 (8.20), followed closely by ST_1 and SO_1 (8.17).

Results and Discussion. Improvements were most evident in taste and flavor, indicating that aromatic compounds naturally present in fermented rye can enrich the sensory profile and partially replace salt's flavor-enhancing role. Across concentrations, ST displayed slightly superior hedonic performance, likely due to subtle compositional differences such as organic acid levels or fermentation-derived volatiles. Texture Profile Analysis revealed a dose-dependent effect. At low inclusion levels (1-2%), both sourdoughs produced noticeable crumb softening and a modest increase in cohesiveness, effects associated with arabinoxylan-driven water retention. At higher levels (3-4%), firmness increased, suggesting gluten dilution and intensified competition for water. ST generated the strongest softening effect at low levels, highlighting functional distinctions between the two sourdoughs.

Conclusions. Overall, the findings clearly demonstrate that inactive rye sourdough, particularly when used at low inclusion rates can significantly improve both sensory and textural attributes of salt-free bread. This makes it a practical and effective strategy for sodium reduction, allowing manufacturers to maintain product quality and consumer acceptability while aligning with modern nutritional recommendations.

Keywords: *bakery products, sensory attributes, sodium reduction, textural parameters*

Acknowledgments. This work was supported by a grant of the Ministry of Education and Research, CCDI-UEFISCDI, project number PN-IV-PCB-ROMD-2024-0135, within PNCDI IV and NARD, 25.80013.5107.22ROMD.

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