

Effect of Pathogenic Bacteria on Volatile and Sensory Characteristics of Table Olive Brines

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INTRODUCTION & AIM

The safety and quality of fermented table olives depend on microbial dynamics during fermentation. Although spontaneous fermentation typically inhibits pathogens, their possible survival remains a concern. This study evaluated the survival of five pathogenic bacterial species (*Bacillus subtilis*; *Bacillus cereus*; *Staphylococcus aureus*; *Escherichia coli*; *Enterobacter cloacae*) in olive brine, and their impact on the chemical and sensory properties of the fermentation.

METHOD

Pathogenic strains were inoculated into sterilized olive brines and incubated under fermentation-like conditions. Their survival was monitored for 30 days by plate counts. Volatile compounds were analyzed by GC-MS. Sensory evaluation was assessed by an eight-member expert panel, assessing odor intensity and attributes on a 0-10 scale.

RESULTS & DISCUSSION

Results showed species-dependent pathogen survival over 30 days, with viability ranging from 25% to 80% (Fig. 1).

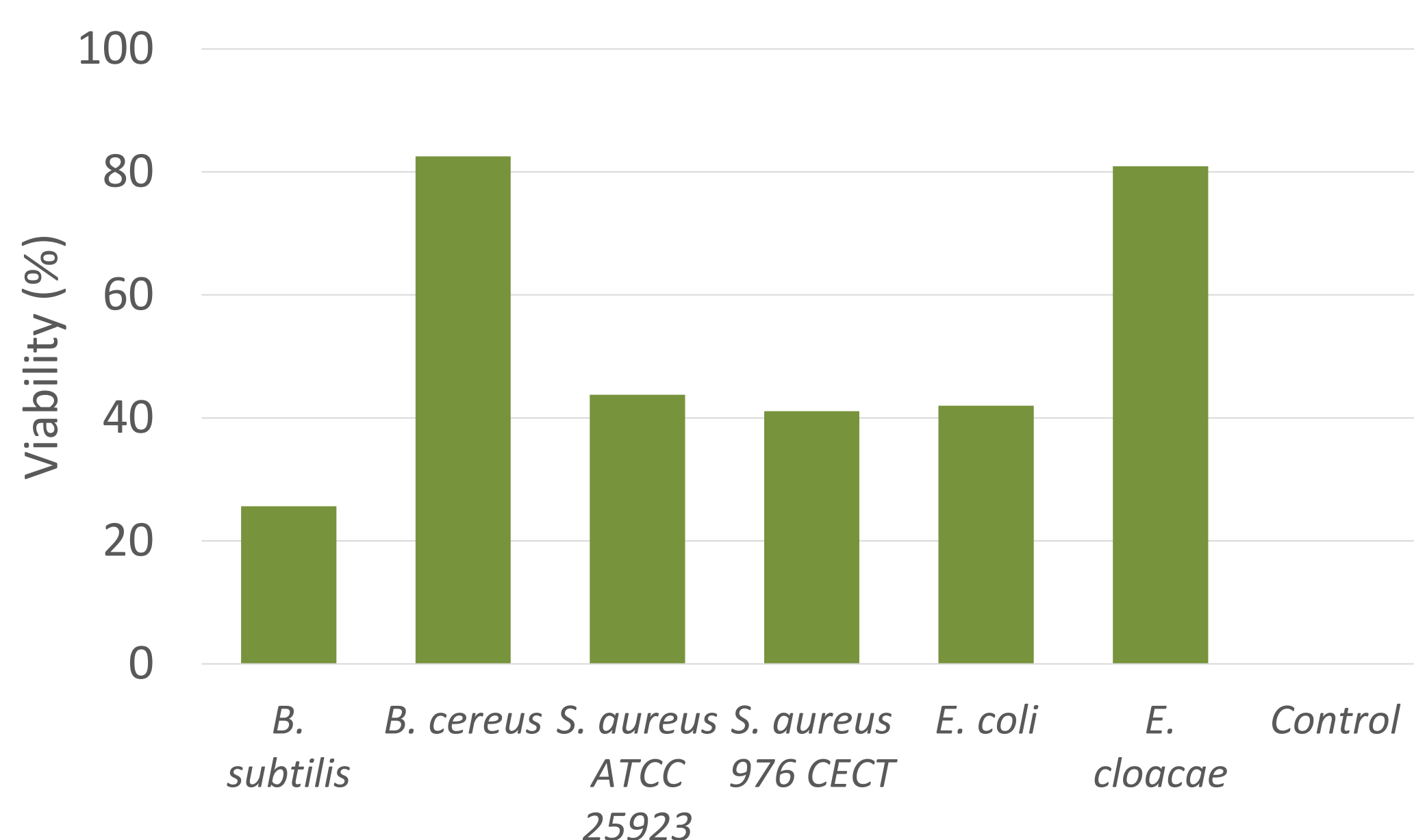


Figure 1. Percentage of pathogen viability after 30 days..

GC-MS revealed distinct differences in the volatile profiles of inoculated brines compared to controls, particularly in phenolic-derived compounds, alcohols, or aldehydes.

CONCLUSION

Certain pathogenic bacteria can persist in olive brines at significant levels and alter their chemical and sensory characteristics. These findings underscore the importance of controlled fermentation and highlight the need to consider both safety and quality in table olive production.

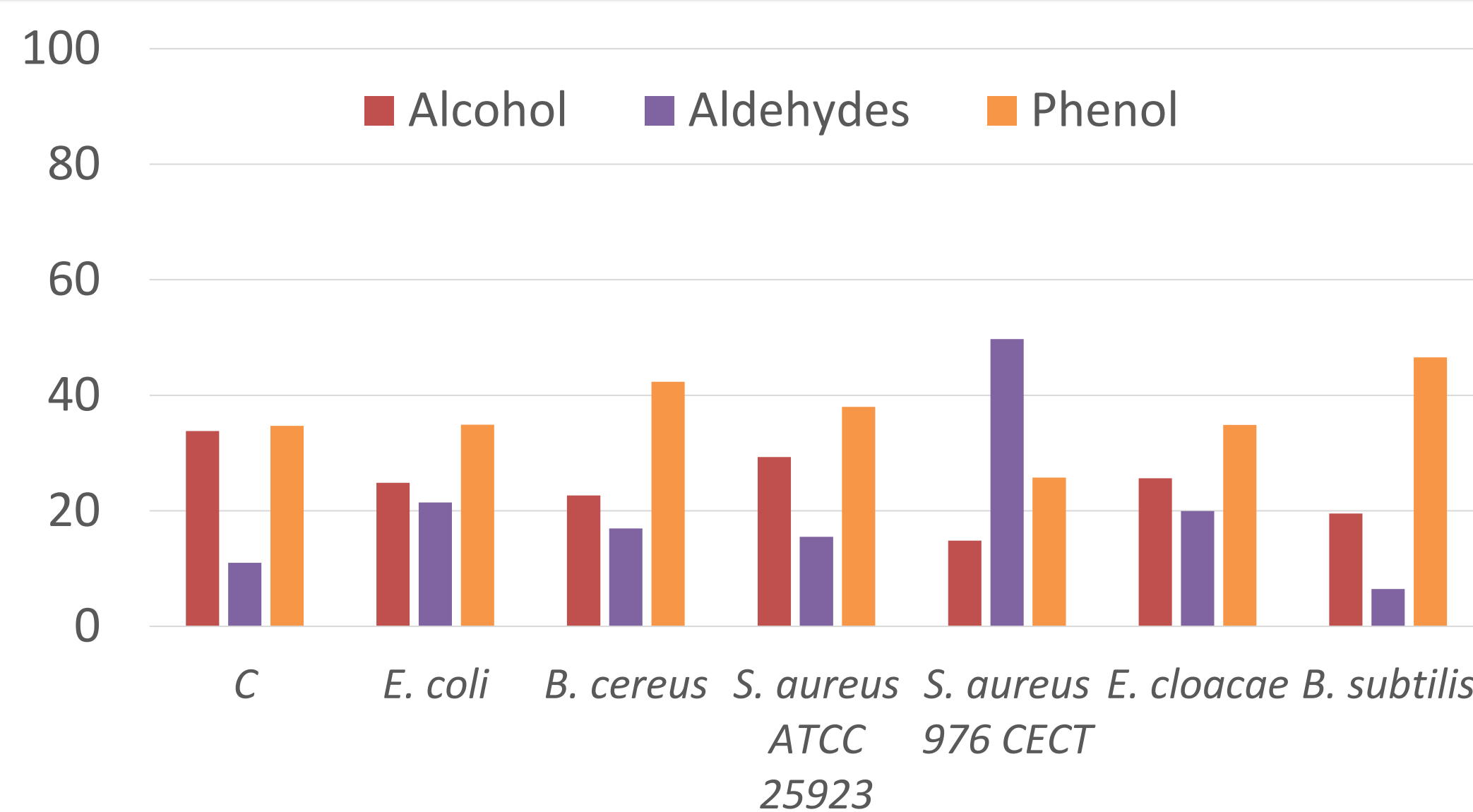


Figure 2. Volatile profiles of inoculated brines.

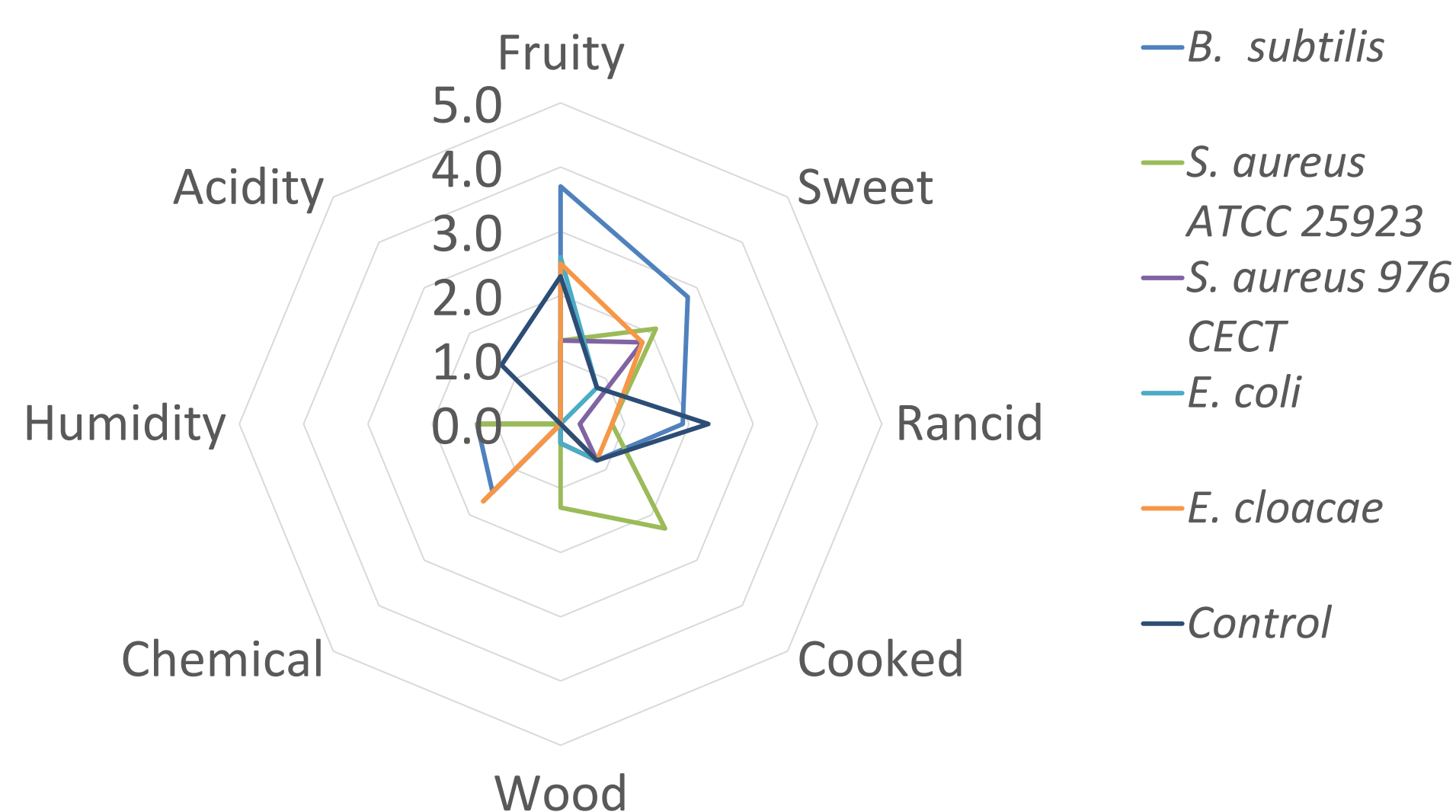


Figure 3. Sensory analysis of inoculated brines.

Sensory analysis confirmed perceptible differences in aroma and overall perception (Fig. 3).