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Fermentation of Gherkins Using Iodized Salt

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Background & Objectives

Currently, iodized salt is not used for gherkin fermentation in the industry, because it is believed that iodized salt inhibits the growth of lactic acid bacteria (LAB), which conduct the fermentation. In this study iodized salt was used for the fermentation of gherkins to investigate if and how iodine affects the microbiota and to monitor the iodine content during fermentation and subsequent pasteurization.

Methods

Non-iodized and iodized salt

5 % salt in brine

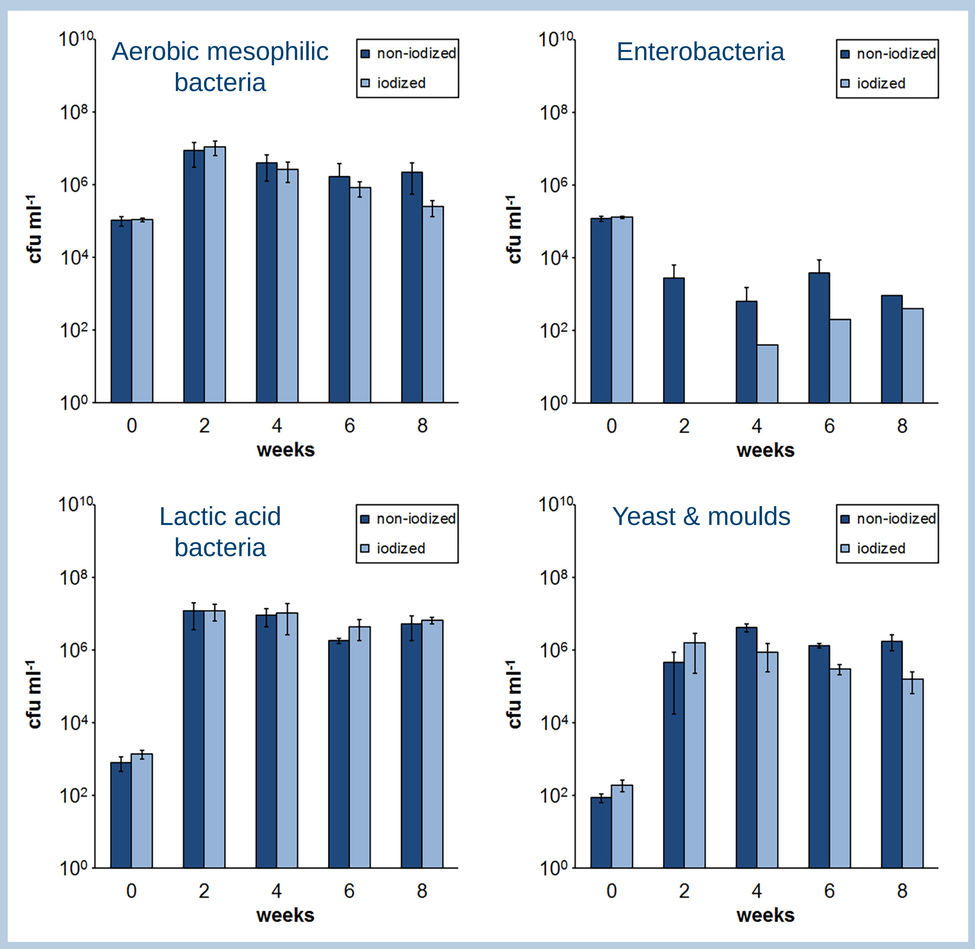
Cucumis sativus Potomac

spontaneous fermentation at 20 °C

every two weeks

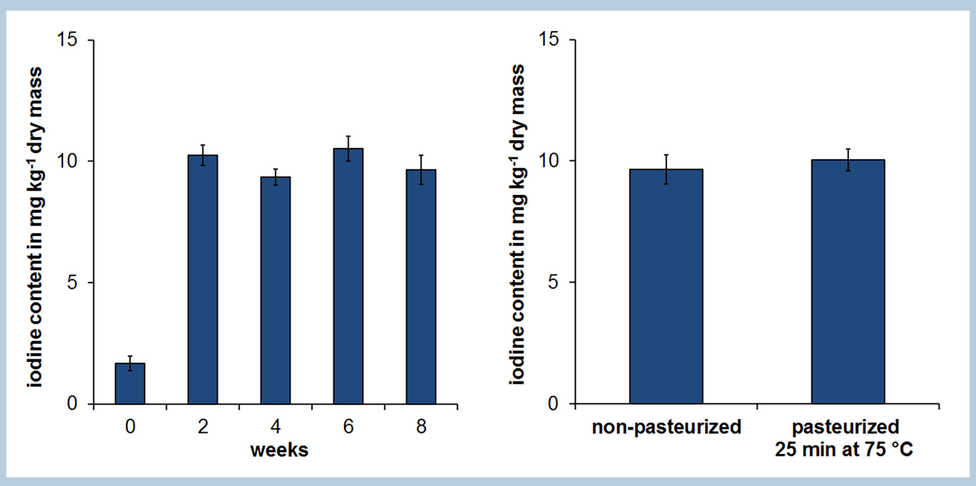
Plate count and 0.5 % NH_3 extraction for ICP-MS measurement

Effect on microbiota



Bacterial counts are shown as mean ± SD.

Iodine content



Iodine content is shown as mean ± SD.

Precision/Limit	
Recovery (%)	> 91 %
Reproducibility (% RSD)	< 5 %
Limit of quantification (LOQ)*	0.44 µg kg^{-1}

* Please note that the LOQ is related to the measured ICP-MS values. Due to the dilution in the course of the extraction, iodine concentrations in the samples are about 200 times higher than the measured values.

Highlights and Conclusion

- Fermentation is not negatively affected by iodized salt.
- Iodine uptake depends on the concentration of iodine in the brine.
- Iodine content remains unaffected by fermentation and pasteurization.

The consumption of gherkins fermented with iodized salt can contribute to the iodine supply.

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