

FERMENTATION OF GHERKINS USING IODIZED SALT

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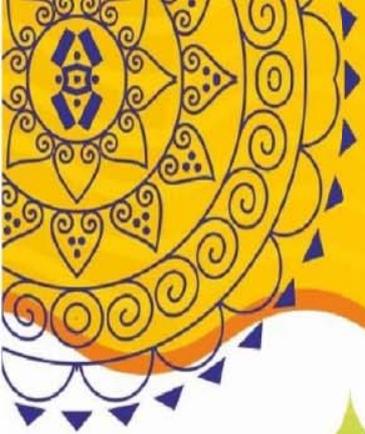
Background & Objectives: Currently, iodized salt is not used for gherkin fermentation in the industry, because it is believed that iodized salt inhibits the growth of lactic acid bacteria (LAB), which conduct the fermentation. In this study iodized salt was used for the fermentation of gherkins to investigate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

Method(s) and Results: Gherkins (*Cucumis sativus* Potomac) were fermented spontaneously (without addition of starter cultures) for 8 weeks at 20 °C in brine (5% iodized and non-iodized salt) followed by pasteurization (25 min, 75 °C). Samples were taken every 2 weeks to determine microbial counts, as well as the iodine content. LAB counts increased within 2 weeks from 10^3 cfu ml⁻¹ to 10^7 cfu ml⁻¹ and remained at this high level until the end of fermentation. Enterobacteria were present at the beginning with 10^5 cfu ml⁻¹ and were reduced to less than 10^3 cfu ml⁻¹ during fermentation. The iodine content in raw gherkins was below the detection limit. After two weeks of fermentation in iodized brine, the iodine content of the gherkins increased and remained constant during the fermentation and pasteurization. At the end of fermentation, the iodine contents in the gherkins and in the brine were equal, indicating the establishment of iodine equilibrium.

Conclusions: Stable fermentations with pH-values below pH 4 were achieved, using both iodized and non-iodized salt. No effects on the counts of total aerobic bacteria, LAB, enterobacteria and yeasts and moulds were determined using iodized salt compared to fermentations conducted with non-iodized salt. The iodine content in the gherkins depended on the iodine concentration in the brine and remained unaffected by fermentation and pasteurization.

Conflict of interest disclosure: The authors declare no conflict of interest, in terms of scientific, financial and personal.

Keywords: gherkins, fermentation, iodized salt



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