Effect of temperature and salt concentration on microbial changes during Tarkhineh fermentation

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ABSTRACT

Tarkhineh is a traditional Iranian fermented cereal food produced both commercially and in homes. It is mainly used in the form of a thick and creamy soup consumed at lunch or dinner and is easily digested. In this study, Tarkhineh were fermented at three different temperatures (10, 20, 37) °C and two different salt content of (0.5, 1) %. The purpose of this study was to determine the amount of micro flora of Tarkhineh. Another purpose is studying changes in microbiological composition of Tarkhineh during fermentation. The results show that the naturally occurring lactic acid bacteria (LAB) load was found to vary between $1.97 \times 10^5$ cfu/gr to $4 \times 10^5$ cfu/gr at 10 °C. The yeast and mold counts decrease from $1.04 \times 10^5$ cfu/gr to 0 cfu/gr at 10 °C. Lactic acid bacteria load was found to vary between $1.97 \times 10^5$ cfu/gr to $4.3 \times 10^5$ cfu/gr at 20 °C. The yeast and mold counts decrease from $1.04 \times 10^5$ cfu/gr to $3 \times 10^4$ cfu/gr at 20 °C and salt content 0.5%. Lactic acid bacteria load was found to vary between $1.97 \times 10^5$ cfu/gr to $1.1 \times 10^6$ cfu/gr at 37 °C. The yeast and mold counts decrease from $1.04 \times 10^5$ cfu/gr to $3 \times 10^5$ cfu/gr at 37 °C and salt content 0.5%. The largest increase in the numbers of LAB was noted during the first 24 h of fermentation and further incubation led to decrease. Maximum total acids produced in Tarkhineh at 37 °C. At 37 °C, the optimum ripening period was 1 day. The results show that Tarkhineh fermentation is complex and is due mainly to certain LAB and yeasts naturally present in raw materials. Among the many factors affecting Tarkhineh fermentation, salt content and temperature are the most important. Also the temperature and salt...