

PE6.05 Contamination of a dry sausage – «tea sausage» with toxigenic moulds and ochratoxin A during the ripening 187.00

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Abstract. Total viable count of moulds/cm² of «tea sausage» surface ranged from 16.0 after 12 days of ripening to 4.0 after 21 days. Isolated fungi belonged to 4 genera and 8 species (*Eurotium herbariorum*, *Mucor hiemalis*, *M. jansseni*, *Penicillium aurantiogriseum*, *P. chrysogenum*, *P. citrinum*, *P. hordei*, *Rhizopus stolonifer*). *P. aurantiogriseum* and *P. chrysogenum* were the most frequent fungal species. Five samples (17%) of 30 total tested were found to be contaminated with OTA at concentrations between 12.00 and 21.00 µg/kg.

I. INTRODUCTION

Fungi that develop on the surface of fermented and related types of sausages not only after the sensoric properties of the products but are also a constant health hazard to human because of their toxic metabolites (2, 3, 4). Their spores are widespread in nature, in air, earth, water, feed and food, everywhere (1, 6). Since many of fungal species are potentially toxigenic, serious consequences (economic losses) may follow and the health of intoxicated people consuming such food may be affected. Ochratoxin A-producing moulds have often an important share in mycopopulations isolated from different kinds of feed and food in our country as well as ochratoxin A (7). The aim of this study was to examine the occurrence of moulds, with a special attention to the toxigenic ones, and ochratoxin A in «tea sausage», a type of fermented sausage.

II. MATERIAL AND METHODS

Contamination of «tea sausage», a type of fermented sausage, during the ripening with moulds and ochratoxin A (OTA) was investigated. Experiments were done in a meat processing plant in Vojvodina, Serbia. Sampling of «tea sausage» (5 samples each time) were performed after 5, 8, 12, 16, 18 and 21 day. Mycological investigation. Isolation of moulds was carried out by swabbing the surface of sausage (20 cm²) with

swabs moistened with sterile 0.1% (v/v) Tween 80. Inoculated Petri dishes (in triplicates) with Sabouraud maltose agar (SMA) and streptomycin (0.01-0.02%) were incubated for 7 days at 25 °C. Total viable count of moulds/cm² is given as the average value. Identification of isolated fungi was performed according to Samson and van Reenen-Hoekstra (4) and Samson et al. (5). OTA investigation. Determination of OTA was done by direct enzyme-linked immunosorbent assay (CD-ELISA) using Neogen Veratox® testing kit.

III. RESULTS AND DISCUSSION

Mycological investigation. As it can be seen from Table 1 fungi were isolated from surface of sausage samples already after 5 days of the ripening (sample 1, 10.2 moulds/cm²). The number of moulds increased for next 7 days (sample 3, 16.0 moulds/cm²) and then a decrease in their number was observed. At the end of «tea sausage» ripening only 4.0 moulds per cm² on the surface were found. Isolated fungi were classified into 4 genera and 8 species as follows: *Eurotium herbariorum*, *Mucor hiemalis*, *M. jansseni*, *Penicillium aurantiogriseum*, *P. chrysogenum*, *P. citrinum*, *P. hordei* and *Rhizopus stolonifer* (Table 2). At the beginning of ripening Zygomycetes (*Mucor* spp., *Rhizopus* sp.) had a highest share in isolated mycopopulations, but later *Eurotium herbariorum* and some *Penicillium* species, as a typical xerophilic fungi, were dominant. The most frequent throughout the experiments were found to be two *Penicillium* species, *P. aurantiogriseum* and *P. chrysogenum*, fungal species known as producers of various toxic metabolites, including OTA (2, 4, 6). OTA investigation. Five «tea sausage» samples of total 30 were contaminated with OTA (Table 3). It was established that 2 samples contained OTA at concentrations of 12.50 and 14.00 µg/kg after 8 days of ripening. The toxin was detected in another 2 samples after 12 days (12.00 and 15.50 µg/kg) and in 1 sample (21.00 µg/kg) after 16 days of ripening.

IV. CONCLUSIONS

The most of fungal species (*Eurotium herbariorum*, *Penicillium aurantiogriseum*, *P. chrysogenum*, *P. citrinum*, *Rhizopus stolonifer*) isolated from «tea sausage» are potentially toxigenic. About 17% of sausage samples tested were contaminated with OTA.

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