

**INFLUENCE OF SOME TREATMENTS ON
THE FUNGAL GROWTH AND
MYCOTOXIN INCIDENCE IN SOME
CHEESE VARIETIES**

BY

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رسالة مقدمة من

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ABSTRACT

Ragia Omar Youssef Mohamed, Influence of Some Treatments on The Fungal Growth and Mycotoxin Incidence in Some Cheese Varieties. Unpublished Ph.D. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2005.

The aim of this study was to diagnosis the common molds infecting local market Ras cheese and to evaluate the antifungal efficiency of eugenol, propolis and the substitution of Yoghurt Starter Culture (YSC) with *Lactobacillus* one (LSC) for avoiding the fungal infection and hence aflatoxin production in plastic uncoated Ras cheese wheels.

Twenty four samples of mature Ras cheese were randomly surveyed from different four locations in Cairo and Giza governorates during the period extending from March to August 2002. Experimentally Ras cheese wheels were finished with surface spraying with 200 ppm eugenol, 5 or 10% propolis solution instead of plastic coating. On the other hand, the normal Ras cheese starter culture, namely YSC was substituted with nil, 50 and 100% of mixed LSC of *L. Casei* and *L.reuteui* (1:1) for making plastic uncoated Ras cheese. Furthermore aflatoxin containing mature Ras cheese was exposed for making processed cheese spread using different cooking temperature (75-95°C).

The results of surveying part revealed that each of the dry matter (DM), fat / DM and protein contents conformed to the Egyptian legal standard while the yeasts and molds counts of all samples were over the legal standard. Five *penicillum* spp.were found and *P.fumiculosium* was the most dominant

followed by six *Asperigillus* spp. from which *A. Parasiticus* was the most dominant of this genus whilst, *Fusarium* spp. was not detected.

Three types of aflatoxins (AF) were found namely AF.B₁, G₁ and G₂ were the maximum mycotoxins found in market Ras cheese with sum concentration reached sometimes to 2.25 ppb.

Experimentally, as the plastic coating forbode, the wheels surface spraying either with 200 eugenol or 10% propolis solution prevented completely the fungal growth and aflatoxins production of *A. Parasiticus* on Ras cheese wheels. Likewise the substitution of YSC with LSC at a level of 50% at least led also to inhibit the purposely artificial fungus to grow. Moreover, all experimented trails of plastic coating substitution did not exhibit any abnormal behavior either in all gross composition criteria namely, DM, Fat/DM protein / DM and ash / DM contents or the repining indices studied namely, titratable acidity, pH value, water soluble nitrogen / total nitrogen and total volatile fatty acid of Ras cheese along maturation period (three months). Moreover, the conversion of aflatoxin containing mature Ras cheese into processed cheese spread led to disappear the aflatoxin regardless the cooking temperature mainly due to the presence of emulsifying salts.

Keywords: Ras cheese, processed cheese spread, gross composition, ripening indices, *L. Casei*, *L. reuteri*, *A. Parasiticus*, *Penicillium* spp., *Aspergillus* spp, Aflatoxin.

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