



Determination of Some Contaminants in Silver Carp and Catfish Flesh from Wadi El-Rayan Lake and the Effect of Traditional Cooking Methods on Their Concentrations

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Abstract: In this study, the determination of some heavy metals, organochlorine pesticides residues (OCRs) concentrations and microbiological aspects were carried out of two fish species flesh; silver carp (*Hypophthalmichthys molitrix*) and catfish (*Clarias gariepinus*) from Wadi-El Rayan 1st Lake in El-Fayoum Governorate, Egypt during February, 2017. Also, the effect of traditional cooking methods (boiling, frying and grilling) on these parameters levels were evaluated. According to the results, the determined heavy metals (lead, cadmium, manganese, copper and zinc) and detected organochlorine pesticide residues (p,p'-DDD, p,p'-DDE, p,p'-DDT, endosulfan-I, endosulfan-II, endosulfan-sulfate, heptachlore, endrin, endrin aldehyde, α -HCH, β -HCH, γ -HCH and δ -HCH) concentrations and total bacterial count (TBC) in raw flesh of two fish species were lower than the permissible limits set by International and Egyptian Standard Specifications and Legislations of food. By cooking methods; the thermal processes led to the decrease or increase of investigated heavy metals, boiling was the highest cooking method followed by grilling in the reduction of heavy metals (reduced all heavy metals) but, frying was increased most heavy metals concentrations. OCPs; most detected pesticide residues in raw flesh of two fish species were decreased, boiling was the highest in reduce OCRs concentrations followed by frying and grilling. Microbiologically; TBC was sharply reduced in all cooked fish samples, frying was the highest cooking method in reduction TBC followed by grilling and boiling. Also, neither *salmonella sp.* nor yeast and mould were detected in raw and cooked both silver carp and catfish flesh. Therefore, the fishes in Wadi-El Rayan 1st Lake especially investigated silver carp and catfish were considered very safe and validating for human consumption and traditional cooking methods (boiling, grilling and frying) were found appropriate for reducing the dangerous effect of heavy metals, organochlorine pesticides residues and bacterial counts.

Keywords: Wadi El-Rayan Lake; fish; pollutants; traditional cooking methods.