SPECIFIED DEVICED TECHNIQUES FOR DETECTING FISH CONTAMINANTS

By

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Approval Sheet

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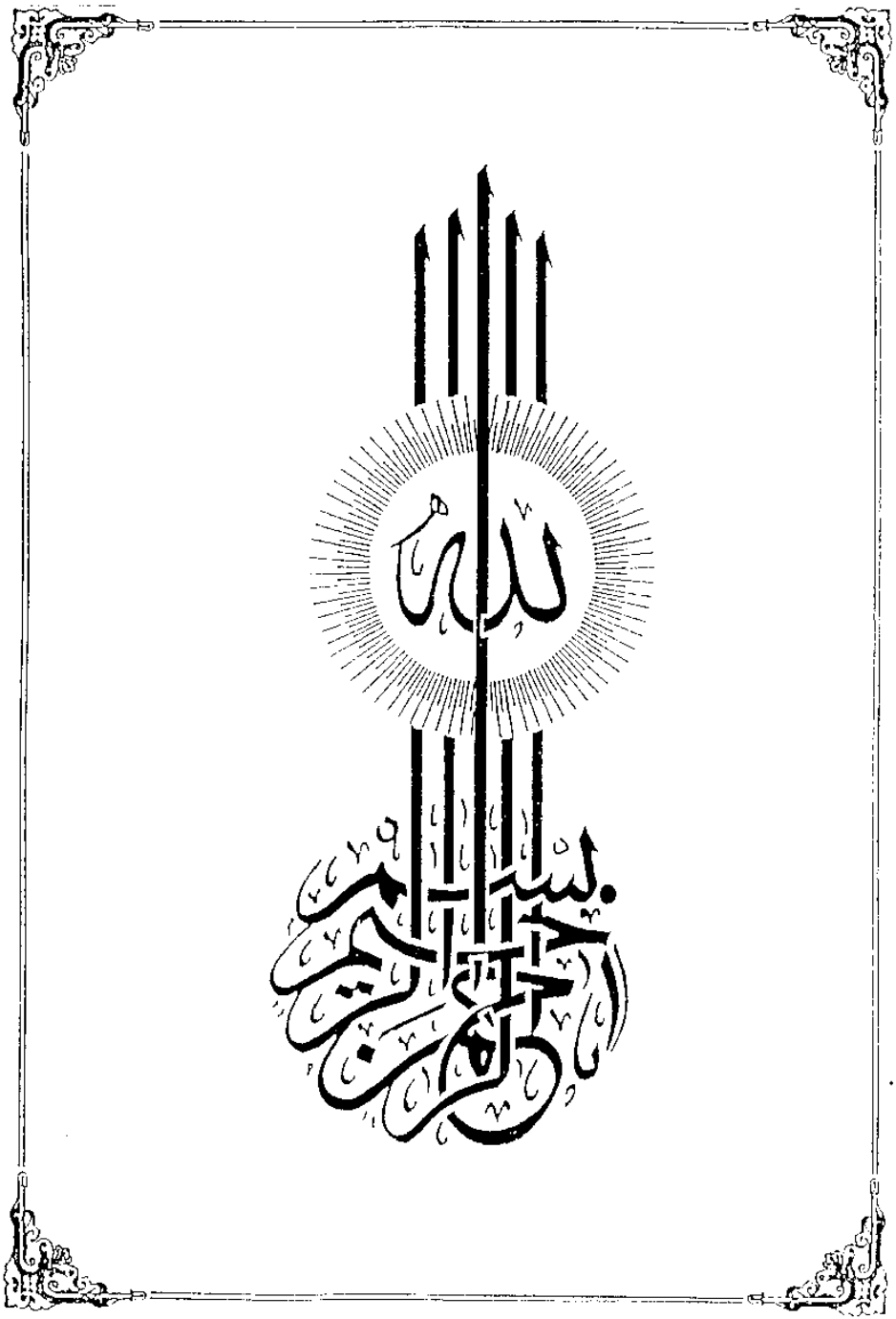

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A B S T R A C T

The relation between contaminants (such as pesticides & heavy metals) and biological aspects of fish was considered. So, different fish and water samples were taken from the commercial markets of 8 governorates (Red Sea, Suez, Ismailia, Damietta, Port Said, Fayoum,

Aswan and Alexandria) and 4 selected lakes (Bardawil, Manzala, Marute and Wadi El-Raiyan). Organochlorine pesticides, i.e., beta-BHC, lindane, heptachlor, aldrin, gamma-chlordane, and DDT were determined in fish samples from the previous governorates. In addition to organochlorine pesticides, malathion as organophosphorous pesticide was determined in fish and water samples collected from the 4 lakes. Fish samples from the previous lakes were also analyzed for heavy metal contaminants, i.e., Cd, Cu, Fe, Mn, Pb, Zn and Hg.

The acute toxicity of pesticides was studied using Tilapia nilotica and Cyprinus carpio. The fish samples were exposed to six different concentrations of both DDT and malathion for 96 hr. Mortality %, LC_{50}'s, relative susceptibility relative toxicity and safe concentrations were calculated for both fish species.

Chronic toxicity and accumulation of malathion were also determined by exposing the previous two fish species to 3 different concentrations of malathion for 26 days. Muscles, gills, intestine and livers were analyzed for the determination of accumulation ratio. The effect of different cooking methods on the accumulated malathion in the fish muscles was investigated and degradation ratio was calculated for each process.

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INTRODUCTION

I N T R O D U C T I O N

It is well known that fish and fish products are considered to be one of the main animal protein sources. In Egypt, and in spite of the presence of several natural water lakes and the greatest zones of fish catching areas (Mediterranean Sea, Red Sea and River Nile), the annual production of fish was not more than 324000 ton in 1989. such relatively low annual fish production may be related to many well known factors; one of which is the problem of contaminant matters which may enter food chains (especially fish resources) at many different stages, i.e., natural water constituents, feed ingridients, irrigation water and sprayed pesticides.

Contaminant matters as a group of pollutant materials have a long history and had been recorded early during the Roman Impire; but now, such problem have just become a major one during the last two decades. Subsequently, it is of great importance to look at contaminant matters, especially pesticides and heavy metals as a system of interaction between air, water and organisms.

The production of synthetic toxicants, as pesticides was increased and these contaminants can be introduced to the environment or to the natural water sources via