

Plastic Toxicity and Heir Endangerous Affect in Fish (*Tilapia Mossambica*) and in Human

Dr. Y.Thangam¹, S. Rajeswari²

^{1,2}PG and research department of zoology, J.K.K.Nataraja College of Arts and Science, Kumarapalayam, Mamakkal Dt, Tamilnadu, India

Abstract: Plastic substances cause hazards to human health and the environment. In natural, terrestrial and freshwater habitats plastic accounts inadvertent contamination of water with small plastic fragments as a consequence of spreading sewage sludge of fragments of plastic and glass contaminating compost prepared from municipal solid waste and of plastic being carried into streams, rivers and ultimately the sea and fresh water with rain water and flood events. The percentage mortality of *Tilapia mossambica* fingerlings increased with increase in concentration of plastic chemical was dose dependent. This was the results obtained from this study.

Keywords: Plastics, *Tilapia mossambica*, Bioassay studies

1. Introduction

Human, animals, plants, and microorganisms are exposed to a very large number of chemicals that are released from many different sources enter the organisms by different routes. Plastics and products, which are the focus work, are extremely diverse, both in terms of chemical composition, properties and possible applications. Many chemicals are used to make plastics may lead to adverse effects for human health and the environment. Several hazardous substances may be released during the life cycle of a plastic product; and considering the large and growing global consumption of plastic products, and their omnipresence and persistence in the environment, there is a need for assessing the hazards and risks of this large material group. Many additives are hazardous for human health and the environment. Plastic have accumulated in the natural environment and in landfills. Around 10 per cent by weight of the municipal waste stream is plastic (Barnes *et al.*, 2009). Discarded plastic also contaminates a wide range of natural, terrestrial, freshwater and marine habitats, with newspaper accounts of plastic on some of the highest mountains. Despite the environmental concerns about some of the chemicals used in plastic manufacture, it is important to emphasize that evidence for effects in humans is still limited and there is a need for further research and in particular, for longitudinal studies to examine temporal relationships with chemicals that leach out of plastics (Adibi *et al.*, 2008).

In India, plastics are extensively used in the manufacture of license sticks, as a perfume binder (Sonde *et al.*, 2000). The chemical used to make plastics are Bisphenol A, Polyvinyl chloride, Polymers, different types of phthalates. The monomer used to manufacture PVC plastic, vinyl chloride, is a known carcinogen and exposure can cause angiosarcoma of the liver (Gennaro *et al.*, 2008). Plastic and hazardous chemicals are made from plastic polymers to which additives are added to enable processing and/or to give certain desired properties for a specific application. Plastics have been reported to affect multiple biochemical processes in humans and wildlife. These include effects on reproduction, damage to sperm (Rozati *et al.*, 2002), early onset of puberty in females (Wolf, 2010), anomalies of reproductive tract (Desdoits- lethimonier *et al.*, 2012),

infertility (Tranfo *et al.*, 2012) and adverse outcomes of pregnancy (whyat *et al.*, 2009), to neuro development (Miodovnik *et al.*, 2011) and allergies (Bornehag *et al.*, 2004). *Tilapia mossambica* is a good biological model for toxicological and immunotoxicity studies (Giron-perez *et al.*, 2008).

2. Method

Two types of methods were identified, they are the Continous flow method and Static method (APHA, 1998) of the two types, the static method were followed for the mortality study.

3. Result

The percentage mortality of *Tilapia mossambica* fingerlings increased with increase in concentration of plastic chemical was dose dependent. This was the results obtained from this study.

Table 1: Cumulative percentage mortality of *Tilapia mossambica* exposed to graded concentrations of plastics for a maximum of 96hrs

Plastic (µg/L) %	Mortality				Total %
	(24 h) %	(48 h) %	(72 h) %	(96h)%	
Control	0	0	0	0	0
50	2.0	12.0	7	2.5	23.5
75	4.7	14.7	10.3	8	37.7
100	15.0	15.3	4.0	2.0	36.3
150	40.0	23.5	15	5	83.5

Affect of Plastics which Causes Hazard to Human Health
Feeding Bottle Reduces Ptyalin Enzyme Activity in
Children



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Plastic Cups Causes Carcinogenic Activation in Cells



Carry Bags Causes Mutant Activity in Cells Plastic in Medical Devices is a Slow Poison



Plastic Boxes and Bottles Reduces the Metabolic Activity in Human



4. Discussion and Conclusion

The resulting plastic polymer can be blended with different additives, for instance plasticizers, flame retardants, heat stabilizers, antioxidants, light stabilizers, lubricants, acid scavengers, antimicrobial agents, anti-static agents,

pigments, blowing agents and fillers, and is finally processed into a plastic product. There are many different plastic polymers and several thousand different additives, which results in an extremely large variation in chemical composition of plastic products (Rozati, 2002). Release of hazardous substances from plastic products to air, extraction fluids, water, food, food stimulants, saliva and sweat have been shown by chemical analysis. Examples of substances studied and released from various plastic products include phthalates, brominated flame retardants (Geens *et al.*, 2010), lead, tin and cadmium (Al-Malack, 2001), formaldehyde and acetaldehyde (Özlem, 2008), 4-nonylphenol (Fernandes *et al.*, 2008), MTBE (methyl tert-butyl ether), benzene and many other volatile organic carbons. Large fraction of plastic waste ends up as litter in the terrestrial and marine environment. The marine environment is especially exposed and has been most widely studied. Large and increasing amounts of plastic products, debris, fragments and even micro-particles are found in the open ocean, on the surface, in the deep ocean and ocean bed, in coast lines, in sediments, and in organisms (Barnes *et al.*, 2009). Combustion of plastics may cause emissions of hazardous substances and contributes to global warming (since most plastics are fossil based). Chemical recovery is under development and means that chemicals, e.g. raw materials such as monomers and gases, are recovered/converted from the plastic material. This can, for instance, be done by controlled thermal degradation such as thermolysis, which is a non-catalytic cracking process (Al-Salem, 2009).

This study shows that percentage mortality of *Tilapia mossambica* fingerlings is based on the concentration of plastics and was dose dependent. Plastics causes hazards to human health. In children feeding bottle reduces ptyalin enzyme. Plastic cups causes carcinogenic activation in cells. Carry bags causes mutant activity in cells. Plastics in medical devices is a slow poison. Plastics boxes and bottles reduces the metabolic activity in human.

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