

Field Studies on the Using Herbes to Minimize Cadmium Toxicity on Fish

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Abstract: Contamination of aquatic ecosystem by industrial and agricultural pollutants may affect the health of fish, either directly by uptake from the water, or indirectly through their diet of vegetation, invertebrates or smaller fish. While the obvious signs of group pollution, dead fish, has long been recognized, there is increasing evidence that low-level pollution may decrease the fecundity of fish populations leading to long term decline in fish numbers, such sub-lethal pollution could impact on reproduction, either indirectly via accumulation in the reproductive organs, or directly on the free gametes (sperm or ovum) which are released in to water, owing to their bioaccumulation and non-degradability, heavy metals pose a serious pollution hazard to the aqueous environment. Fish exposed to metals are usually characterized by increased metal levels in the gonads. Gonadal levels of copper and zinc of *Catostomus commersoni* living in polluted lakes were higher than those in fish inhabiting unpolluted waters. More concentration on an example of heavy metal widely contaminating our Egyptian water bodies.

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Introduction

Cadmium is a major contaminant originating from different industrial wastes and phosphate containing fertilizers. Cadmium is a ubiquitous environmental pollutant that has been associated with severe damage in various organs, particularly the tests, causing severe testicular degeneration, seminiferous tubule damage and necrosis. Pituitary damage, testicular degeneration, and decrease in fry numbers inhibition of spermatogenesis with only a few spermatids and mature sperms remaining after cadmium exposure have already been reported. Disruptive effects of pollutants could be due to disruption of the endocrine system and the inhibition of hormone production, the deleterious effects of toxicants may be exerted on the hypothalamic-pituitary system or could be directed at gonadal steroid production. Plasma estrogen decreased after exposure of *Monopterus albus* to cadmium, although it has been shown that cadmium contamination stimulates vitellogenesis, plasma levels and in-vitro synthesis of estradiol in Atlantic croaker.

Considering the high sensitivity of the testicular tissue to Cadmium toxicity, prevention and/or therapeutic intervention is major concern. The use of herbal medicine has become increasingly popular worldwide. A lot of herbal materials were widely used as a folk remedy for curing male infertility in traditional medicine.

Upon our available data, the present study is considered a preliminary trial concerning the anti-infertility effect of some herbal remedies against Cadmium induced male infertility.

Contamination of aquatic ecosystem by industrial and agricultural pollutants may affect the health of fish, either directly by uptake from the water, or indirectly through their diet of vegetation, invertebrates or smaller fish.

The obvious signs of group pollution is death of fish which has long been recognized, there is increasing evidence that low-level pollution may decrease the fecundity of fish populations leading to long term decline in fish numbers, such sub-lethal pollution could impact on reproduction either indirectly via accumulation in the reproductive organs or directly on the free gametes (sperm or ovum) which are released in to water. Owing to their bioaccumulation and non-degradability, heavy metals pose a serious pollution hazard to the aqueous environment. Fish exposed to metals are usually characterized by increased metal levels in the gonads. Gonadal levels of copper and zinc of *Catostomus commersoni* living in polluted waters. More concentration on an example of heavy metal widely contaminating our Egyptian water bodies; Cadmium is a major containing fertilizers. Cadmium is ubiquitous environmental pollutant that has been associated with severe damage in various organs, particularly the tests, causing severe testicular degeneration, seminiferous tubule damage and necrosis. Pituitary damage testicular degeneration and decrease in fry numbers inhibition of spermatogenesis with only a few spermatids and mature sperms remaining after cadmium exposure have already been reported. Disruptive effects of pollutants could be due to disruption of the endocrine system and the inhibition

of hormone production, the deleterious effects of toxicants may be exerted on the hypothalamic-pituitary system or could be directed at gonadal steroid production. Plasma estrogen decreased after exposure of *Monopterus albus* to cadmium, although it has been shown that cadmium contamination stimulates both oogenesis, plasma levels and in-vitro synthesis of estradiol in Atlantic croaker.

Background

Considering the high sensitivity of the testicular tissue to Cadmium toxicity, prevention and/or therapeutic intervention is of major concern. The use of herbal medicine has become increasingly popular worldwide. A lot of herbal materials were widely used as a folk remedy for curing male infertility in traditional medicine.

Also Cadmium accumulates and affects fish life. Recently some herbal preparation hepatotonic drug has been found to protect liver and gut in *Mystus tengara* fish against Cd-intoxication each tablet is composed of *Capparis spinosa* 65 mg, *Cichorium intybus* 65 mg, *Solanum nigrum* 32 mg, *Cassia occidentalis* 16 mg, *Terminalia arjuna* 32mg, *Achillea millefolium* 16 mg, *Tamarix gallica* 16 mg, *Mandur Bhasna* 33 mg.

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