Advanced studies on some chemical pollutants mostly detected in some fish farms

by

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Abstract

The present study aimed to investigate the most popular pollutants (malathion and glyphosate) residue in water samples (84 sample) collected from different fisheries at summer season. Then, studying the effect of malathion and glyphosate on fish and role of dietary organic selenium in improving health status of exposed tilapia. Results during the field survey revealed higher levels of malathion than permissible limits in almost fish farms while glyphosate levels was within acceptable levels in all fish farms. A total of 210 apparently healthy fresh tilapia (*Oreochromis niloticus)* with average body weight 14±0.5 g were adapted under laboratory conditions for two week and then they were randomly divided into 7 groups: **CON**: served as control, **GLY**: (glyphosate 2 mg /L and commercial diet), **MAL**: (malathion 0.5mg /L and commercial diet), **GLY+ OSe**: (glyphosate 2 mg /L and OS diet), **MAL+ OSe:** (malathion 0.5mg /L and OS diet), **GLY+MAL+ OSe:** (malathion 0.3 mg/L and glyphosate 1.6mg/L and OS diet) **and GLY+MAL:** (malathion 0.3 mg/L and glyphosate 1.6mg/L and commercial diet). The examined pollutants impact were investigated at different periods of the experiment (30, 45 and 60 days) by measuring the following parameters: Growth performance index (body weight gain and FCR), some hematological (Hb, RBCs, Ht, Thrombocytes and WBCs) and biochemical parameters (Total protein, Albumin, AST, ALT, Urea and Creatinne), anti-oxidant status (MDA, SOD and GPX) and finally fish were experimentally infected with *Aermonus hydrophilia*, then observed and examined for *A. hydrophilia* count in liver and kidney samples. The results revealed that the hazards caused by malathion were more prominent than that caused by glyphosate, malathion was more toxic to tilapia than glyphosate. Adding of organic selenium (0.8 kg^{-1} diet) was capable to enhance fish antioxidant status and relief the damage caused by malathion and /or glyphosate

Key words :

Malathion- Glyphosate-Organic selenium - Growth - Tilapia- Immunity- oxidative stress- *Aermonus hydrophilia*.

List of Contents

List of Abbreviation

Abbreviation	Expression
AchE	Acetylcholine estrase
$Ag\ No_3$	Silver nitrate
ALT	Alanine amino transferase enzyme
AST	Aspirate amino transferase enzyme
B. wt	Body weight
BWG	Body weight gain
CAT	Catalase
Cl^-	Chloride
CNS	Central nervous system
CON	Control
EC	Electric conductivity
EDTA	Ethylene Diamine Tetra Acetic acid
EPA	Environmental protection agency
FCR	Feed conversion ratio
GLY	Glyphosate
GPx	Glutathione peroxidase enzyme
GR	Growth rate
GR_X	Glutathione Reductase
GSH	Glutathione
GT	Glutathione Transfease
Hb	Hemoglobin
HCL	Hydrochloric acid
HPI	Hypothalamic Pituitary Interrenal
$K_2\ Cro_4$	Potassium chromate
LDH	Lactate dehydrogenase enzyme
MAL	Malathion

Abbreviation	Expression
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin Concentration
MCV	Mean corpuscular volume
MDA	Malondialdehyde
Na_2Co_3	Sodium Carbonate
Ngg^{-1}	Nano gram per gram
NH_4	Ammonia
NO_3	Nitrate
O Se	Organic selenium
OC	Organo chlorines
OP	Organophosphate
PER	Protein efficiacy ratio
ppb	Part per billion
ppm	Part per million
RBCs	Red blood cells
ROS	Reactive oxygen species
rpm	Rotation per minute
SGR	Specific growth rate
SOD	Super oxide dismutase enzyme
SR	Survival rate
TDS	Total dissolved solids
TP	Total protein
USEPA	United state environmental protection agency
WBCs	White blood cells

List of Tables

List of Figures

List of photos: