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LIST OF ABBREVIATIONS

ACE	: Angiotensin converting enzyme.
AchE	: Acetylcholine esterase.
ADI	: Acceptable daily intake.
ALT	: Alanine aminotransferase.
ALP	: Alkaline phosphatase.
AP1	: Activator Protein1
AST	: Aspartate aminotransferase
BALF	: Bronchoalveolar lavage fluid.
BUN	: Blood urea nitrogen.
B.wt	: Body weight.
C. longa	: *Curcuma longa*, also known as turmeric.
cAMP	: Cyclic adenosine monophosphate
CAT	: Catalase enzyme.
Ccl_4	: Carbontetrachloride.
CYP450 or P450	: Cytochrome P450.
DBP	: di- n- butylphthalate.
DDT	: Dichlorodiphenyltrichloroethane.
DEF	: s, s, s-tributylphosphorothioate.
DHT	: Dihydrotestosterone.
DM	: Deltamethrin
DNA	: Deoxyribonucleic acid.
DTNB	: 5, 5` dithiobis (2-nitrobenzoic acid, Ellman's reagent).
EE	: Ethinylestradiol.
FAO	: Food& Agriculture Organization of the United Nations
Fe-NTA	: Ferric nitrilotriacetic.
FFA	: Free fatty acids.
FSH	: Follicle stimulating hormone.
GABA	: Gamma amino butyric acid.
GGT	: Gamma glutamyl transpeptidase.
Gpx	: Glutathione peroxidase.
GRD	: Glutathione reductase.
GST	: Glutathione-s-transferase.
HDL	: High density lipoprotein.

HIV	: Human Immunodeficiency Virus.
HPLC	: High performance liquid chromatography.
HSP70	: Heat shock protein 70.
I κB kinase; IKK	: inhibitor of kabba B kinase.
IL-8	: Interleukin-8.
IL-8mRNA	: Interleukin-8 messenger ribonucleic acid.
I.P	: Intra- peritoneal.
LDH	: Lactate dehydrogenase.
LDL	: Low density lipoprotein.
LH	: Luteinizing hormone.
LOOH	: Lipid hydroperoxide.
µM	: Micro ml.
MDA	: Malondialdehyde.
MN	: Micronuclei.
NADPH	: Nicotinamide adenine dinucleotiode phosphate.
NAG	: N- acetyl-B-D- glucosaminidase
NF-KB	: The transcriptional Nuclear Factor Kappa B.
NO	: Nitric oxide.
8-OHdG	: 8-hydroxy deoxyguanosine.
3-PBA	: 3-phenoxybenzoic acid.
PNMC	: 3- methyl- 4- nitrophenol.
RANKL	: Receptor activator of NF-kB Ligand.
RNA	: Ribonucleic acid.
ROS	: Reactive Oxygen Species.
SCE	: Sister Chromatid exchange.
S.E	: Standard error.
SGOT	: Serum glutamate oxaloacetate transaminase.
SOD	: Superoxide dismutase
T_3& T_4	: Thyroxine and triiodothyronine hormones.
TBARS	: Thiobarbituric acid reactive substances
TG	: Triacylglyceroles.
TNB	: 5- thionitrobenzoic acid.
TNF-α	: Tumor necrosis factor alpha.
TPA	: 12-O- tetradecanoylphorbol-13- acetate.
THC	: Tetrahydrocurcumin.
UDS	: Unscheduled DNA Synthesis.

VHDL	: Very high density lipoprotein.
VLDL	: Very low density lipoprotein.
WHO	: World Health Organization.
xd/xo	: Xanthine dehydrogenase/xanthine oxidase.

SUMMARY

The lives and health of millions of people were suffering from the rapid rise of degenerative diseases worldwide which is threatening economic and social development. As the base of many of the diseases is food/feed stuff contamination so many toxicities can be avoided by changing lifestyle, the most important one is diet. Over the past few years; there has been increasing interest in turmeric *(Curcuma longa*) due to its medicinal properties.

Firstly beginning by determination of LD_{50} of fentromethrin to facilitate the other experiments.We aimed to establish the toxic effects of fentromethrin (1/20 LD_{50}) on 152mature male albino rats after 65 days exposure, with special reference to the possible beneficial effect of *C. longa* powder (100mg/kg B.wt) in amelioration of the studied toxic effects. The half lethal dose of fentomethrin (LD_{50}) was firstly determined using 72 male albino rats to be 30.12 mg/kg B.wt. Then eighty male rats were divided into four groups each contain twenty rats. The first group were not received any treatment and served as control. The rats of second, third and fourth groups were dosed by stomach tube day after day for two months, the second group administered 1/20 LD_{50} fentromethrin diluted in distilled water., while the third group received the previously dose of curcumin followed by the same dose of fentromethrin with at least two hours apart. The fourth group received the *C. Longa* powder (100mg/kg B.wt) dispersed in distilled water. The rats were sacrificed after the end of the experiment. Blood samples were taken from both treated and control groups for sera separation for enzymatic and hormonal detection, epididymal contents were obtained for assessment of rat fertility. The liver, brain, thyroid gland and testes were rapidly removed, a part of each organ was homogenized and centrifuged for estimation of enzymatic and non enzymatic antioxidants, other part

were reserved in carnoy's preservative for the histochemical detection of nucleic acids (DNA and RNA).

In this study we recorded that fentromethrin caused significant increase of MDA in liver, brain and testes; highly significant decrease of GSH (but remain within the normal limits in brain), CAT levels, vit A and vit E in liver, brain and testes, also highly significant decrease of both SOD and GPx in serum.

MDA was highly near to the control levels in liver and brain of rats dosed with *C. longa* rhizomal powder and fentromethrin, while level of GSH is normal in brain and insignificantly decreased in liver when compared to control group, also CAT levels in both brain and testes were significantly decreased while it remained within the normal levels in liver. Testes of rats treated with *C. longa* rhizomal powder and fentromethrin showed non-significant decrease in both vit A and E while other groups displayed normal levels.

Both SOD and Gpx were significantly increased in serum of rats treated with *C. longa* rhizomal powder and non-significantly increased in rats treated with *C. longa* rhizomal powder and fentromethrin comparing to control group.

T_3 decreased than the control, T_4 was insignificantly decreased in rats treated with fentromethrin as compared to control group, also testosterone decreased significantly. Normal levels of T_3, T4 and testosterone were observed in rats treated with both *C. longa* powder and fentromethrin.

All enzymatic and non-enzymatic antioxidants and the hormones (T_3, T4 and testosterone) demonstrated improved levels even more than normal after administration of *C. longa* rhizomal powder only. Rats treated with fentromethrin revealed insignificant decrease in body weight and sperm cell concentration, also sperm

motility was significantly decreased, while testis weight was insignificantly increased comparing to control rats. Weights of seminal vesicle and prostate gland were not affected. Rats dosed with *C.longa* rhizomal powder alone or with fentromethrin showed improvement in all parameters.

Histochemistry study revealed marked decrease in DNA and RNA of hepatocytes, cerebral neurons, thyroid follicle epithelium and seminiferous tubular epithelium after dosing with fentromethrin, while DNA and RNA reaction appeared to be strong after co-treatment with *C. longa* rhizomal powder and fentromethrin.

The DNA and RNA stain ability were better than any of the other groups after *C.longa* rhizomal powder administration.

The present study clearly indicated the chemoprotective role of *C.longa* and suggests its potential use in status of fentomethrin toxicity.