EFFECT OF BASIL LEAVES (Ocimum basilicum) AND OLIVE LEAVES (Olea europaea) EXTRACTS ON TOXICITY OF BIOPESTICIDE EMAMECTIN BENZOATE IN RATS

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ABSTRACT

The present investigation is aimed to use the dried ethyl acetate extracts for *Ocimum bacilicum* (basil leaves) and *Olea europaea* (olive leaves) to reduce toxicity of Emamectin benzoate (Biopesticides). DPPH radical scavenging activity showed a significant inhibition at all extracts (ethyl acetate 98% > aqueous 90% > ethanol 77% > hexane 49%) in *Ocimum basilicum* compared to *Olea europaea* (ethyl acetate 91% > ethanol 83% > aqueous 70% > hexane 61.9%). The phytochemical active compounds of *Olea europaea* and *Ocimum basilicum* were qualitatively analyzed for leaves separately, triterpenes and steroids were presented in hexane extract in *Ocimum basilicum* and *Olea europaea* , lipids were presented in hexane extract of *Ocimum basilicum* and found in hexane and ethanol extracts of *Olea europaea* , tannins were present in ethanol and aqueous extracts of *Ocimum basilicum* and aqueous extract only of *Olea europaea*, carbohydrates and saponines were present in ethanol and aqueous extracts of *Ocimum basilicum* and *Olea europaea*, flavonoids were presented in ethyl acetate, ethanol and aqueous extracts, in (HPLC) showed that ethyl acetate was the best solvent for quantitative extraction of olive leaves phenolic and flavonoids while aqueous, ethanol and hexane were least effective. Hexane was particularly ineffective as an extractant for the basil leaves and aqueous > ethanol > ethyl acetate was the best solvent for quantitative extraction of basil leaves phenolic and flavonoids. Biochemical changes were estimated on rats after treatment of emamectin benzoate with different doses of ethyl acetate (OLE and BLE) for 28 days. The results showed that there was increase in AST and ALT activities, decrease in the total protein content, significant decrease in albumin content, significant increase in serum urea, creatinine, significant increase in serum cholesterol ,triglyceride, LDL-C and significant decrease in liver SOD, CAT and GPx activities ,increase in liver MDA level for dose 1/40 LD_{50} of EB (1.0 mg/kg) alone during the 14 and 28 days of the experiment period as comparing with control group during at the same period. There was decrease in ALT, AST activities, serum cholesterol, triglyceride, LDL-C, urea, creatinine content and an increase in albumin, T.P content after 14 and 28 days also. An increase in liver SOD, CAT and GPx activities whereas decrease in liver MDA content after 28 days when rats administrated with emamectin benzoate 1.0 mg/kg treated with OLE and BLE (200 and 400 mg/kg).

Key words: DPPH, BLE, emamectin benzoate, *Ocimum bacilicum* , *Olea europaea*, OLE, T.P ABTS, toxicity, SOD, CAT, GPx, MDA, ALT, AST, Urea, creatinine, lipid profile, albumin,

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LIST OF ABBREVIATION

4-HN: 4-hydroxy -2-nonenal
ABM: Abamectin
ABTS 2,2-azinobis (3-ethyl-benzothiozoline)-6-sulfonic acid
ALB: Albumin
ALT: Alanine aminotransferase
AST : Aspartate aminotransferase
B.W : Body weight
BAE: Basil aqueous extract
BHT: Butylated hydroxytoluene
BLE: Basil leaves extract
CA : Caffeic acid
CAT : Catalase
CCl_4: Carbon tetrachloride
CE: Catechein equivalent
Ch : Cholesterol
CHOC: Chinese hamster ovary cells
DDB: Dimethyl diphenyl bicarboxylate
Dex : Dexamethasone
DNA : Deoxyribosenuclic acid
DPPH: 1,1-diphenyl-2-picrylhydrazyl radical
EB : Emamectin benzoate
EC : Emulsion concentration
EtOAc: Ethyl acetate
EtOH: Ethanol
FEO: Fennel essential oil
FRAP: Ferric reducing antioxidant power
GABA: Gamma-Aminobutyric acid
GAE: Gallic acid equivalent
GPx : Glutathione peroxidase
GR: Glutathione reductase
GSH: Oxidized glutathione
GST: Glutathione-S-transferase
HDL-C: High density lipoprotein- cholesterol
Hex: Hexane
HOCl : Superoxide anion hypochlorous acid

HPLC: High performance liquid chromatography
Ip: Intraperitoneally
LC_{50}: Median lethal concentration
LD_{50}: Median lethal dose
LDL-C: Low density lipoprotein- cholesterol
LPO : Lipid peroxidation
MDA: Malonyldialdehyde
MET: Methomyl
MOEB: Methanol extract of *Ocimum bacilicum*
MOEB: Methanol extract of *Ocimum bacilicum*
O.B: *Ocimum basilicum*
O.R: *Olea europaea*
OC: *Ocimum canum*
OLE : Olive leaves extract
PL : Pancreatic lipase
RA: Rosmarinic acid
ROS: Reactive oxygen species
RSM: Response surface methodology
SCGE: Single-cell gel electrophoresis
SDS: Sodium dodecylsulphate
SOD: Super oxide dismutase
T.G: Triglyceride
T.P: Total protein
TAA: Thioacetamide
TBARS: Thiobarbituric acid reactive substances

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