**Ain Shams University**
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# Comparative Study on the Effect of Nano Curcumin Complexes as Antitumor in Mice

*Thesis Submitted by*

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***Radwa Wahid Mohamed Elnagar***

# Contents

## List of Abbreviations

| | |
|---|---|
| %ILS | The percentage of increased of life span |
| 4-HNE | 4-hydroxynonenal |
| AgNPs | Silver nanoparticles |
| ALP | Alkaline phosphatase |
| ALT | Alanine Aminotransferase |
| AP-1 | Activator protein 1 |
| Apaf-1 | Apoptosis protease activating factor-1 |
| AST | Aspartate Aminotransferase |
| ATCC | American Type Culture Collection |
| ATP | Adenosin triphosphate |
| BCC | Basal cell carcinoma |
| CA15-3 | Carbohydrate Antigen 15-3 |
| CAT | Catalase |
| Casp-3 | Caspase-3 |
| CML | Chronic myeloid leukemia |
| CNS | Central nervous system |
| COX2 | cyclooxygenase-2 |
| CRP | C-Reactive Protein |
| CuO-NCs | Copper oxide nanocomplexes |
| CuO-NPs | Copper oxide nanoparticles |
| Cur | Curcumin |
| Cur-Cu-NCs | Curcumin Capped Copper nanocomplexes |
| Cur-Cu-NPs | Curcumin capped copper nanoparticles |
| Cur-NCs | Curcumin Nanocomplex |
| DTNB | 5, 5´-dithio-bis-2-(nitrobenzoic acid) |
| DEN | Diethyl nitrosamine |
| DHAA | Dehydroascorbic acid |
| DHC | Dihydrocurcumin |
| DLS | Dynamic Light Scattering |

## List of Abbrev.

| | |
|---|---|
| DRs | Death receptors |
| EAC | Ehrlich Ascites Carcinoma |
| EDTA | Ethylene Diamine Tetra Acetic acid |
| EPR | Enhanced permeability and retention |
| FADD | Fas-associated death domain |
| FBS | Fetal bovine serum |
| GAP | Glyceraldehyde 3-phosphate |
| GAPDH | Glyceraldehyde 3-phosphate dehydrogenase |
| GLUT | Glucose transporter |
| GSH | Reduced Glutathione |
| GSSG | Glutathione disulfide |
| HC | Healthy Control |
| HCT | Hematocrit |
| HepG2 | Human liver carcinoma cell line |
| HHC | Hexahydrocurcumin |
| $HO^{\bullet}$ | Hydroxyl radical |
| HRP-Streptavidin | Horseradish peroxidase-Streptavidin |
| HRTEM | High resolution transmission electron microscopy |
| HR-TEM | High resolution transmission electron microscopy |
| HS | Hydrazine sulfate |
| HS-Cu-NCs | Hydrazine sulphate-copper nanocomplexes |
| HS-Cu-NPs | Hydrazine sulphate-copper nanoparticle |
| IL-1R | Interleukin-1 receptor |
| iNOS | Inducible nitric oxide synthase |
| IOS | International Organization for Standardization |
| I.M. | Intramuscular |
| I.P. | Intraperitoneal |

| List of Abbreviations (Cont.) | |
|---|---|
| I.V. | Intravenous |
| IL | Interleukin |
| IT | Intratumoral |
| MCF-7 | Human breast carcinoma cell line |
| MCH | Mean corpuscular hemoglobin |
| MCHC | Mean corpuscular hemoglobin concentration |
| MCV | Mean corpuscular volume |
| MDA | Malondialdehyde |
| MDA-MB 231 | breast cancer cells |
| MES | 2-(N-morpholino) ethanesulphonic acid |
| MMP-9 | matrix metalloproteinase-9 |
| MNP | Magnetic nanoparticles |
| MSN | Mesoporous silica nanoparticles |
| MST | Mean survival time |
| MTW | Mean Tumor Weight |
| $NaBH_4$ | Sodium Borohydride |
| NAC | N-acetyl-cysteine |
| NAD | Nicotinamide adenine dinucleotide |
| Nano-Cur | Nano curcumin |
| Nano-Cur-NCs | Nano-Curcumin nanocomplexes |
| Native-Cur | Native curcumin |
| Native-Cur-Cs | Native Curcumin complexes |
| NCI | National Cancer Institute |
| NCs | Nanocomplexes |
| NF- kB | Nuclear factor kappa-light-chain-enhancer of activated B cells |
| NPs | Nanoparticles |
| $O_2^-$ | Superoxide anion |

| List of Abbreviations (Cont.) | |
|---|---|
| O-native-Cur-Cs | Oral native Curcumin complexes |
| PARP | Poly ADP-ribose polymerase |
| PBS | Phosphate buffered saline |
| PEG | Polyethylene glycol |
| PKM2 | pyruvate kinase M2 |
| PT | Permeability transition |
| PTI | Post Tumor Inoculation |
| RNS | Reactive nitrogen species |
| ROS | Reactive oxygen species |
| SAC | Streptavidin Conjugate |
| SPSS | Statistical Package for Social Science |
| SRB | Sulphorhodamine-B |
| STAT3 | Signal transducer and activator of transcription 3 |
| T/G %: | Tumor growth inhibition ratio |
| TBM | Tumor bearing mice |
| TGF-β1 | Transforming growth factor beta 1 |
| THC | Tetrahydrocurcumin |
| TLR | Toll-like receptors |
| TBA | Thiobarbituric Acid |
| TMB | Tetramethylbenzidine |
| TME | Tumor micro environment |
| TNB | 5-thio-2-nitrobenzoic acid |
| TNF | Tumor necrosis factor |
| TR-HIF1α | Target of rapamycin- hypoxia-inducible factor 1α |

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