



# **THE PROTECTIVE ROLE OF FOLIC ACID AGAINST THE SIDE EFFECTS OF AN IMMUNOSUPPRESSIVE DRUG ON THE LIVER OF MALE ADULT ALBINO RATS: A MICROSCOPICAL, BIOCHEMICAL, AND ELECTROPHORETIC STUDY**

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"الدور الوقائي لعقار حمض الفوليك ضد التأثيرات الجانبية لأحد العقاقير  
المنشطة للمناعة على كبد ذكور الجرذان البيضاء البالغة: دراسة مجهرية ،  
بيوكيميائية ، وباستخدام الفصل الكهربائي."

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## LIST OF ABBREVIATIONS

|            |                               |
|------------|-------------------------------|
| <b>AB</b>  | : Apoptotic body.             |
| <b>ALB</b> | : Albumin.                    |
| <b>ALP</b> | : Alkaline phosphatase.       |
| <b>ALT</b> | : Alanine aminotransferase.   |
| <b>AST</b> | : Aspartate aminotransferase. |
| <b>BC</b>  | : Bile canaliculus.           |
| <b>BD</b>  | : Bile ductule.               |
| <b>BG</b>  | : Blood congestion.           |
| <b>Bph</b> | : Basophilic.                 |
| <b>BS</b>  | : Blood sinusoid(s).          |
| <b>C</b>   | : Chromatin.                  |
| <b>Cc</b>  | : Chromatin clumping.         |
| <b>CD</b>  | : Condensed face.             |
| <b>Cis</b> | : Cisternae.                  |
| <b>Co</b>  | : Collagen.                   |
| <b>CR</b>  | : Cell remnants.              |
| <b>CV</b>  | : Central Vein.               |
| <b>CY</b>  | : Cytoplasm.                  |
| <b>D</b>   | : Desmosomes.                 |
| <b>DNA</b> | : Deoxyribonucleic acid.      |

|                   |                                      |
|-------------------|--------------------------------------|
| <b>EC</b>         | : Endothelial cell(s).               |
| <b>ED</b>         | : Electron-dense.                    |
| <b>EDTA</b>       | : Ethylene diamine tetraacetic acid. |
| <b>F</b>          | : Fragmental.                        |
| <b>FA</b>         | : Folic acid.                        |
| <b>FB</b>         | : Fibroblasts.                       |
| <b>FCD</b>        | : Focal cytoplasmic degeneration.    |
| <b>Fig(s).</b>    | : Figure(s).                         |
| <b>FN</b>         | : Fragmented nuclei.                 |
| <b>G</b>          | : Glycogen.                          |
| <b>GA</b>         | : Golgi apparatus.                   |
| <b>GGT</b>        | : Gamma glutamyltransferase.         |
| <b>GI</b>         | : Gastrointestinal.                  |
| <b>H</b>          | : Hepatocyte(s).                     |
| <b>Hx &amp; E</b> | : Haematoxylin and Eosin.            |
| <b>I.p.</b>       | : Intraperitoneal(ly).               |
| <b>IC</b>         | : Ito cell.                          |
| <b>J</b>          | : Junction.                          |
| <b>KC</b>         | : Kupffer cell(s).                   |
| <b>LD</b>         | : Lipid droplet(s).                  |
| <b>LI</b>         | : Lymphatic infiltration.            |
| <b>LN</b>         | : Lytic necrosis.                    |
| <b>Lys</b>        | : Lysosomes.                         |

|            |                            |
|------------|----------------------------|
| <b>M</b>   | : Mitochondria.            |
| <b>MB</b>  | : Mallory's bodies.        |
| <b>MC</b>  | : Macrophage.              |
| <b>Mn</b>  | : Mononucleated.           |
| <b>Mo</b>  | : Month.                   |
| <b>Mtn</b> | : Multinucleated cell.     |
| <b>MTX</b> | : Methotrexate.            |
| <b>MV</b>  | : Microvilli.              |
| <b>N</b>   | : Nucleus.                 |
| <b>NE</b>  | : Nuclear envelope.        |
| <b>NP</b>  | : Nuclear pore(s).         |
| <b>Nu</b>  | : Nucleolus.               |
| <b>OF</b>  | : Open face.               |
| <b>P</b>   | : Pyknotic.                |
| <b>PC</b>  | : Plasma cells.            |
| <b>PM</b>  | : Plasma membrane.         |
| <b>PoV</b> | : Branches of portal vein. |
| <b>Pr</b>  | : Projections.             |
| <b>PR</b>  | : Polyribosome.            |
| <b>Pr</b>  | : Processes.               |
| <b>PSA</b> | : Psoriatic arthritis.     |
| <b>Pv</b>  | : Pinocytotic vesicles.    |
| <b>Px</b>  | : Peroxisomes.             |

|               |                                                                               |
|---------------|-------------------------------------------------------------------------------|
| <b>RA</b>     | : Rheumatoid arthritis.                                                       |
| <b>RBC(s)</b> | : Red blood cell(s).                                                          |
| <b>RC</b>     | : Remnants of cytoplasm.                                                      |
| <b>RER</b>    | : Rough endoplasmic reticulum.                                                |
| <b>RNA</b>    | : Ribonucleic acid.                                                           |
| <b>SD</b>     | : The space of Disse.                                                         |
| <b>SDS</b>    | : Sodium dodecyl sulphate.                                                    |
| <b>SER</b>    | : Smooth endoplasmic reticulum.                                               |
| <b>SGOT</b>   | : Serum glutamate oxaloacetate transaminase.                                  |
| <b>SGPT</b>   | : Serum glutamate pyruvate transaminase.                                      |
| <b>TB</b>     | : Total bilirubin.                                                            |
| <b>TNF</b>    | Tumour necrotic factor.                                                       |
| <b>TP</b>     | : Total protein.                                                              |
| <b>TUNEL</b>  | : <u>T</u> erminal d <u>U</u> TP <u>n</u> ick- <u>e</u> nd <u>l</u> abelling. |
| <b>V</b>      | : Vacuolated.                                                                 |

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