

3. MATERIALS AND EQUIPMENT

3.1. Materials

- **Biological materials**

- a. **Plant material:**

Seeds of *Echinacea purpurea* variety Rubinstern were kindly obtained from SEKEM Company, Egypt.

- b. **Animals**

Male BALB/c mice (18-20 g) were used as a source for the peritoneal macrophages isolation.

- c. **Yeast**

Candida albicans reference strain was obtained from American Type Culture Collection (ATCC) product no. 10231™. was kindly prepared and provided by colleagues in department of Bioprocess Development, GEBRI, SRTA-City, Borg El-Arab.

- **Chemicals**

Agar (Roko, Spain)

Ammonium chloride (Acros organics, USA)

Antibiotic recipe: 100 Units penicillin, 100 µg streptomycin and 0.25 µg/ml amphotericin B (Sigma, Germany)

Benzyladenine (BA; HiMedia Laboratories, Belgium)

Caffeic acid (Sigma, USA)

Caftaric acid (Sigma, USA)

Calcium chloride (Sigma, USA)

Chicoric acid (Sigma, USA)

Chitosan, high molecular weight (Sigma, USA)

Chlorogenic acid (Sigma, USA)

Di-sodium hydrogen phosphate (El Nasr pharmaceutical chemicals co., Egypt)

EDTA sodium (Acros organics, USA)

Ethanol absolute (Fisher Scientific, USA)

Ferulic acid (Sigma, USA)

Fetal Bovine Serum (FBS; Lonza, USA)

Ficoll-Hypaque (density 1.077 g/L, Lonza, USA)

Formalin (Fisher Scientific, USA)

Formic Acid Optima™ LC/MS Grade (Fisher, USA)

Gallic acid (Mallinckrodt Chemical Inc.)
 Glacial acetic acid (S D Fine-Chem Limited, India)
 Gluteraldehyde (Fluka BioChemika, Buchs, Switzerland)
 Hank's Buffered Salt Solution (HBSS; Sigma, USA)
 Hydrochloric acid (HCl) (Fisher Scientific, USA)
 L-glutamine (Lonza, USA)
 LPS (lipopolysaccharides from Escherichia coli, kindly prepared and provided by colleagues in department of Biochemistry, Faculty of Science, Alexandria University, Egypt)
 Methanol HPLC grade (Fisher Scientific, USA)
 Methyl jasmonate (MeJA;Sigma, USA)
 Methylene blue (Panreac,Spain)
 MS media with vitamins (Caisson, USA)
 Naphthalene acetic acid (NAA; Acros, India)
 Naphthylethylenediamine dihydrochloride (Park scientific limited, United Kingdom)
 Neutral red (Bio Basic Inc., Canada)
 O-phosphoric acid (Adwic, Egypt)
 Phenylalanine (Universal Fine Chemicals PVT. LTD., India)
 Phosphoric acid (Adwic, Egypt)
 Phytohemagglutinin PHA-P (Sigma, Germany)
 Potassium chloride (El Nasr pharmaceutical chemicals co., Egypt)
 Potassium dihydrogen phosphate (Fisher Scientific, USA)
 Pyrogen free water (European Egyptian Pharmaceutical Industries, Egypt)
 RPMI 1640 medium (Lonza, USA)
 Sodium acetate trihydrate (Loba, India)
 Sodium bicarbonate (Adwic, Egypt)
 Sodium chloride (El Nasr pharmaceutical chemicals co., Egypt)
 Sodium Hypochlorite (5.25%, Clorox®)
 Sodium nitrite (Loba, India)
 Sodium nitroprusside (El Nasr Pharmaceutical Chemicals Company, Egypt)
 Sucrose (El Nasr Pharmaceutical Chemicals Company, Egypt)
 Sulfanilamide (Biobasic inc., Canada)
 Trypan blue (Sigma,USA)
 Tween 20 (Serva, Germany)

- **Glass and plastic ware**

Disposable pipettes 2 ml and 10 ml (Sorfa, Zhejiang, China (Mainland))
 Falcon tubes 50 ml and 15 ml (Corning, USA)
 Filter paper (No.1 Whatman, Maidstone, UK)
 Glass petri dishes (Anumbra, Czech and Slovak Republic)
 Glass pipettes (Bomex, Glass Co., Beijing, China)
 Haemocytometer (Hausser scientific, USA)

Heparinized blood collection tube, 4 ml (Vacuette®, USA)
Parafilm M (Pechiney Plastic Packaging, Inc., USA)
Polystyrene 96-well plate with covers (TPP Techno Plastic Products, Switzerland)
Syringe filter 0.2 µm (TPP, Switzerland)
Syringes 5 ml and 10 ml (MASCO, Egypt)

3.2. Equipment

Autoclave (STRDY-Industrial Co., Tiwan)
Blender (Moulinex, Egypt)
Centrifuge 5804 (Eppendorf-Netheler-Hinz. GmbH, Hamburg, Germany)
Electronic pipette aid (Jencons Scientific Ltd., UK)
Inverted microscope (IX70m Olympus, Japan)
Lyophilizer (Telstar, Spain)
Mass spectrometer Triple Quad 5500 (AB Sciex, Darmstadt, Germany)
Micropipettes (Gilson, France)
Microplate reader, SPECTROstar Nano (BMG LABTECH, Germany)
Multichannel micropipette (Gilson, France)
Orbital Shaker for 250 mL Erlenmeyer flasks (Thermo Fisher Scientific, USA)
pH meter (Denver Instrument company, Aviada, Colorado, USA)
Samsung Galaxy Grand mobile camera 8 megapixels
Sonication water bath (Sonics & Materials, Inc., USA)
Spirit lamp
Ultra-performance liquid chromatography (UPLC), ekspert™ ultraLC system (Dublin, CA, USA).
Vertical laminar airflow (S2 safety grade, Telstra, Terrazza, Spain)
Water jacketed CO₂ incubator (New Brunswick, NJ, USA)
Weighing balance (Mettler-Toledo, USA)