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(20172) *IN VITRO* CYTOTOXIC AND ANTIBACTERIAL ACTIVITIES OF COMBINATION OF 5,7-DIHYDROXY-4-METHYLCOUMARINE AND SELECTED EXTRACTS FROM MEDICINAL PLANTS

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Medicinal plants have been acknowledged as potential sources of new lead compounds of therapeutic value for drug design and development. These include coumarins, which have attracte the attention because of their diverse pharmacological properties, structural variability and substitutions in their basic structure. Many coumarin compounds have been identified from natural sources. The current study was designed to investigate the cytotoxicity and antibacterial activity of combination of 5,7-dihydroxy-4-methylcoumarine and crude extracts from three selected medicinal plants (*Trigonella foenum graecum*, *Matricaria recutita*, *Silybum marianum*).

The cytotoxicity of tested substances was evaluated on 24h and 48h by three methods: cell morphology characterization by inverted light microscopy and cell viability tests using the Trypan blue dye exclusion method and the MTT assay. Two monolayer cell lines were used in our experiments: larynx carcinoma cell line (HEp-2) and monkey kidney cells (Vero). Based on the data of cytotoxicity were determined maximal nontoxic concentration (MNC) and cytotoxic concentration, which reduce cell viability by 50% (CC50). The antibacterial activity of the combination was tested on methicillin sensitive or resistant strains from the Gram-positive species *Staphylococcusaureus* (MSSA and MRSA, respectively). The minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) were evaluated following ISO 20776-1:2006(E). In parallel, the redox activity of treated bacteria at MIC was measured using the MTT dye (Abs550nm) versus untreated control.

The results obtained revealed that the combination of tested substances express concentration-dependent cytotoxic and antiproliferative activities. The data presented here showed that the tested herbal combination exhibit low cytotoxicity. It was found to reduce cell viability by 50% when applied at concentration > 30 mg/ml for 48h. The combination showed a moderate bacteriostatic effect against both types of strains tested (MIC=2.5 mg/ml). The redox activity at MIC ranged negligible depending on the strain.

The present study was the first report related to the cytotoxic effect and antibacterial activity of combination of 5,7-dihydroxy-4-methylcoumarine and crude extracts from three selected medicinal plants (*Trigonella foenum graecum*, *Matricaria recutita*, *Silybum marianum*). In particular, these substances exhibit low cytotoxicity against several mammalian cell lines and a moderate antimicrobial effect on MSSA and MRSA strains.

Keywords: Cytotoxicity, Antibacterial activity, 5,7-dihydroxy-4-methylcoumarine, medicinal plants