

THE EFFECTS OF GENISTEIN ON MOUSE EMBRYONIC FIBROBLAST CELL LINE

A. RUCIŃSKA, M. ROSZCZYK, T. GABRYELAK

University of Łódź, Poland

Genistein is one of the naturally occurring isoflavones present in plants and is commonly found in a variety of human foods. A number of studies indicated that this class of compounds exerts anticancerogenic and antimutagenic effects in various *in vitro* systems and *in vivo* animal models.

The aim of this study was to investigate the effects of genistein on cultured mouse embryonic fibroblast cell (line NIH 3T3). The isoflavone genistein has been identified as having antiproliferative and apoptotic effects on various malignant cell types derived from solid tumors. Therefore, the cytotoxic and apoptotic properties of this compound were studied *in vitro* by MTT assay and Hoechst 33258/propidium iodide staining technique. The morphological changes of cells were examined in an inverted fluorescent microscope. The number of protein-bound carbonyl groups was quantitated spectrophotometrically using DNPH assay. The cells were exposed to different concentrations of genistein (0–90 μM) after 24 and 48 h of incubation. The results reveal that genistein in concentrations higher than 20 μM , significantly reduced cell viability ($\text{IC}_{50} = 46 \mu\text{M}$), caused cell morphological changes and induced apoptotic and necrotic cell death. Oxidative modification of protein were increased in the cells exposed to genistein in a dose- and time-dependent manner. In conclusion, our preliminary *in vitro* studies demonstrate the damaging effects of genistein on mouse embryonic fibroblast cell line.