

OP005

***In vitro* antitumor activity of *Sarcopoterium spinosum* leaf extract with bioactive natural compounds**Ceren Sunguc^a, Ipek Erdogan^a, Mehmet Emin Uslu^a, Oguz Bayraktar^{b*}^a Izmir Institute of Technology, Department of Biotechnology and Bioengineering Department, Izmir, Turkey^b Izmir Institute of Technology, Department of Chemical Engineering, Izmir, Turkey

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Cancer cell lines cause generation of reactive oxygen species and free radicals at high levels (Wang and Yi, 2008). Then generated free radicals lead to breakdown of the structure of DNA, lipid or protein (Gul et al., 2011). When plant extracts including antioxidant phytochemicals are exposed to the redox reactions, the harmful effects of free radicals are effectively prevented. The aim of present research was to evaluate the antitumor potential of the extract derived from *Sarcopoterium spinosum* leaves.

The leaves of *S. spinosum* were collected in Izmir, Turkey. Total phenol content of ethanolic extract of *S. spinosum* leaves was determined using Folin-Ciocalteu method. Total antioxidant capacity of the extract was measured with ABTS⁺ assay. The cytotoxicity of the extract on different cell lines was performed using MTT viability assay. In order to explain the results at molecular level, Real time-PCR (RT-PCR) was used. *Caspase 3* expression level was used as an indicator of apoptosis.

S. spinosum leaf extract had significant total antioxidant capacity, along with high total phenolic content. Our results revealed the *in vitro* cytotoxic activities of *S. spinosum* leaf extract against different cancer cell lines and normal cell line. The leaf extract of *S. spinosum* showed promising cytotoxic activities at low concentration range, between 50 µg/ml and 200 µg/ml, against breast cancer cell line (MCF7) and colon cancer line (Caco2). On the other hand, it was not cytotoxic to mouse fibroblast cell line (NIH-3T3). Among cancer cell lines, the MCF7 cell line was found to be the most sensitive against the extract treatment. Cytotoxic activity was also confirmed with increased *caspase 3* expression level retrieved from RT-PCR analysis. *Caspase 3* expression level was lowest for 3T3 fibroblast cells. MCF7 cells were more prone to apoptosis, in the presence of extract.

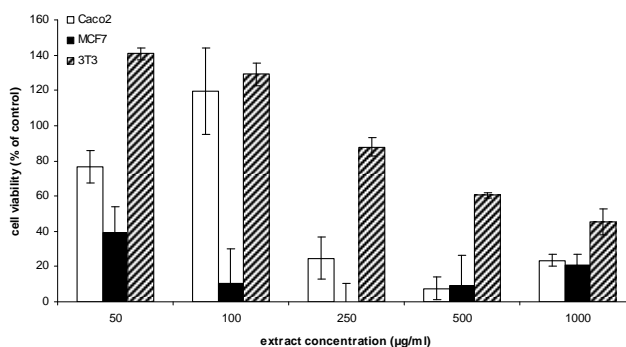


Figure 1. Cell viability of *S. spinosum* extract-treated cell lines. Caco2, MCF7 and 3T3 represent colon cancer, breast cancer and fibroblast cell lines, respectively.

The extracts obtained from the *S. spinosum* leaves may represent an important source of novel potential antitumor natural compounds due to their significant and selective cytotoxic actions towards different cancer cell lines.

References

Wang, J., Yi, J., 2008. Cancer cell killing via ROS: To increase or decrease, that is the question. *Cancer Biology & Therapy*. 7, 1875-1884.

Gul, M.Z., Bhakshu, L.M., Ahmad, F., Kondapi, A.K., Qureshi, I.A., Ghazi, IA. 2011. Evaluation of *Abelmoschus moschatus* extracts for antioxidant, free radical scavenging, antimicrobial and antiproliferative activities using in vitro assays. *BMC Complement Altern Med.* 11: 64.