ABSTRACT

DETERMINATION OF ANTI-CANCER ACTIVITY OF *SPHAGNUM CAPILLIFOLIUM* AND *S. CENTRALE* (BRYOPHYTA)

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In this study, chemical compositions of essential oils and anti-cancer activities of these compositions were studied in two types of moss having prevalence in our country, *Sphagnum centrale* and *S. capillifolium*. After the essential oils in these two species were isolated by extraction methods, their effects on apoptosis were examined by using HL-60 and MCF-7 cell lines. Extracts obtained from the mosses were experimented against the cell lines in different concentrations and periods and then were compared with the control group. MTT method was used to determine proliferation. In MTT method, activities of the extracts taken from these two moss types against HL-60 and MCF-7 cells were determined, and outputs were compiled for 24, 48, and 72 hours. While extracts taken from the two types were indicating an inhibiting influence in HL-60 cell line, under the same conditions, the data taken from the MCF-7 cell line showed that these mosses possess chemicals stimulating tumor cells as well. The cell inhibition here was seen to be quite strong when compared with the control group. HO/PI method was used to determine apoptotic and necrotic cells. With the extracts taken from these two moss types, beside their activities against cancer cells, the ones that cause cell deaths were searched for which type of cell deaths they led to. While these extracts caused apoptotic cell deaths more in low concentrations, they also caused necrotic deaths along with the increase in concentration, and they particularly caused high level apoptotic cell deaths in HL-60 cell line. As a shared feature, approximately all types of different extracts taken from these two species led to the formation of necrotic cells in high concentrations.

Anahtar sözcükler: HL-60, MCF-7, *Sphagnum capillifolium*, *Sphagnum centrale* anti-cancer, Apoptosis