ABSTRACT

Cancer is one of the major causes of death in the world, especially in developed countries. There are already many antiproliferative agents used to cure patients with cancer. However, many of the currently approachable medicines are synthetic chemicals, which are invasive and very often cause alterations in healthy cells. Because of these reasons, there is a tendency to turn back to natural agents used mainly traditionally in folk medicine, because some of them might be potentially effective against tumor development.

In this study, the cytotoxic effects of basil, laurel and juniper extracts on neuroblastoma cancer cells were tested by using MTT and LDH assays. The extracts at concentrations 2; 0,5; 0,1; 0,05 and 0,01 mg/ml were effecting the cells for 12 hours. Another method used for studying of extract's effects was western blotting analysis showing the level of tumor supressor p53 protein in the neuroblastoma cells after extract treatment. The results with treated cells were compared to the untreated cells serving as a control.

The results of MTT assay show decrease in cell viability of cells treated with all three plant extracts at concentration 2 mg/ml. Also four other concentrations of laurel and juniper extracts 0,5; 0,1; 0,05 and 0,05 mg/ml highly decreased the cell viability in comparison to control. Basil extract was effective only at concentration 2 mg/ml. The results of LDH assay show significant decrease in cell viability by cells treated with all three extracts at concentration 2 mg/ml. The other concentrations of all three extracts did not significantly decrease the cell viability compared to control. The reason for different results in MTT and LDH assay probably consists in different mechanisms of methods MTT and LDH assay. It is also possible that the mitochondria of cells does not work any more whilst the cell integrity is not disturbed yet. Western blotting analysis with 0,1 mg/ml concentration of laurel extract did not show any significant differences in p53 protein level compared to control even after longer incubation time (72 hours) with the extract. Cells treated with the basil extract at concentration 0,5 mg/ml showed little higher p53 level after 24 and 30 hours of incubation compared to control.

As the results of this study imply, laurel, basil and juniper extracts have cytotoxic effects on SH-SY5Y human neuroblastoma cells and might also influence the p53 level. These activitities depend on the concentration of extract and incubation time.