In this study, effects of resveratrol as a natural polyphenol compound, gemcitabine as an antimetabolite which has nucleoside structure, analogous of deoxycytidine and paraaminophenol derived paracetamol were investigated with single and combined applications in monolayer MDAH-2774 human ovarian cancer cell line. Drugs were evaluated in cell culture with respect to cell proliferation, cell cytotoxicity (trypan blue dye exclusion test), synthesis phase of cell cycle and cell structure in 24, 48, 72, 96 h. Resveratrol has diminished both cell proliferation and cell cycle synthesis phase indication in monolayer cell cultures (p<0.05). Structural changes were also observed in electron micrographs. Gemcitabine has demonstrated a decreasing effect in cell proliferation and marked reduce according to other drug groups were observed in cell cycle synthesis phase indication in monolayer cell cultures (p<0.05). Structural changes observed in electron micrographs showed more impairment in respect to resveratrol. Even paracetamol has shown a decreasing effect in cell proliferation compared to control group in monolayer cell cultures (p<0.05), this effect increased with respect to other drugs. Similar effects were observed in both control and paracetamol group in cell cycle synthesis phase indication. No structural changes were observed in electron micrographs in both the control and paracetamol group. All combination groups showed similar effects that were mainly more effective in respect to single usage of resveratrol and gemcitabine in monolayer cell culture. As a result, the effects of gemcitabine, resveratrol and paracetamol were investigated in monolayer MDAH-2774 human ovarian cancer cell line and a decrease in cell number in cell cycle synthesis phase, prevention of cell proliferation and destruction of cell structure were observed.
Fig. 1: Control. Tumor cells marked with Brdu (red colored) (a), Resveratrol (R) fewer marked cells (b), Paracetamol (P): large number of marked cells (c), Gemcitabine (G) less marked cells (d); R+G: less marked cells (e), P+G: Cells that have lost their cell extensions, round and unmarked cells (f); x40, 96 th hour.

Fig. 2: Control (a), Resveratrol (R): Degenerated tumor cells with round appearance (b), Paracetamol (P): Tumor cells that seems more degenerated (c), Gemcitabine (G): More spoilt tumor cells (d); R+G: Cells with spoilt structure (e), P+G: Cells with spoilt structure (f), round and apoptotic; a,b,c,d,f x 750, e x1000, 96 th hour.