

# ABSTRACT

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Title of a thesis: Flubendazole influence on breast cells proliferation and activity of acenaphthenol dehydrogenases

This thesis investigates the effect of flubendazole (FLU) on the proliferation of breast cancer cell lines MCF-7 and MDA-MB-231 and nonmalignant breast line MCF-10A. The anthelmintic drug FLU is widely used for treatment cestodoses and nematodoses. The mechanism of FLU's effect against nematodes and cestodes is disruption of the cytoplasmic system of microtubules. In 2010 it was found out that FLU disrupts the microtubules of tumor cells and significantly inhibits the proliferation of leukemia and myeloma cells. The main aim of this paper was to determine whether FLU also inhibits proliferation of breast cancer cells. Another objective was to determine whether FLU interferes with the synthesis of estradiol, because this active estrogen plays an important role in the development of breast cancer. The proliferation of breast cancer cells and nonmalignant cells was usually tested by two viability tests (MTT and NRU) and by continuous monitoring impedance using xCelligence. The inhibitory effect of FLU on enzymes which convert estrone to estradiol was investigated indirectly by determining acenaphtenoldehydrogenases (AND). The results showed that the antiproliferative effect of FLU on various breast cell lines is different. Inhibition of proliferation in MCF-7 cell line didn't reach 50%, whereas in cell lines MDA-MB-231 and MCF-10A cells viability decreased by about 60% (MCF-10A) and 70% (MDA-MB-231) used at concentration of 10  $\mu$ M. A significant inhibitory effect FLU on the activity AND was proved in all tested breast cells MCF-7, MDA-MB-231, MCF-10A, EST).