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Influence of estrogen and polyamines on mifepristone-induced apoptosis in LNCaP cells

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Mifepristone (MIF) induces apoptosis in LNCaP human prostate cancer cell line, accompanying DNA fragmentation and downregulation of *bcl-2*. We studied if 17β- estradiol (E2) and polyamines (putrescine, spermidine, spermine) could prevent MIF-induced reactive oxygen species (ROS) production and apoptosis by analyzing caspase-3, poly(ADP-ribose) polymerase (PARP), and p53. In the present study, MIF induced a significant time- and dose-ependent inhibitory effect on the growth and viability of LNCaP cells. Death of LNCaP cells by MIF treatment appears to be due to a heightened sensitivity to ROS. It is known that ROS mediate p53 activation. MIF treatment resulted in ROS generation and elevation of p53 production. MIF also caused the cleavage of caspase-3 and PARP, which are then activated and effectively induce apoptosis. In human breast cancer cells, E2 acts as antioxidant and polyamine protect DNA damage from ROS. E2 significantly prevented ROS generation induced by MIF in LNCaP cells. But polyamine did not give any influence on ROS generation in the cells. These findings indicate that MIF was effective inducer of apoptosis though caspase-3, PARP and ROS generation, which caused p53 activation in LNCaP cells. The ROS production induced by MIF was ignificantly reduced by E2, which induced PARP and caspase-3 downregulation.