



University of Zabol

Faculty of Science  
Department of Biology

**The Thesis Submitted for the Degree of M.Sc (in the field of  
molecular genetic)**

**Study of cytotoxic effect of polymer  
nano capsules and Paclitaxel on  
malignant human ovarian carcinoma  
cell (SKOV-3)**

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## Abstract

Scientists applied various methods for cancer treatment, apoptosis induction or immune system cancer cells eliminating is the backbone of the methods. Mainly, the reason of drug resistance, immune system suspending and therapy failure is heterogeneity, genomic instability in cancer cells which responsible for apoptosis signal suspending and low drug efficiency. Nanotechnology by applied Nano-carrier, developed the drug delivery in medicine, the benefit of that used for cancer treatment methods such as chemotherapy, gene therapy, and immunotherapy. Paclitaxel and other anti-cancer agent must be targeted cancer cells only, because complications of anti-cancer drug impact on all of normal cells in body. In this study we investigated the cytotoxicity of poloxamer F127 Nano-capsule & paclitaxel on SKOV-3 cells line. Cytotoxicity effect determined by MTT assay, we also used caspase activity and qPCR for three oncogene contain *MECOM*, *PRKC<sub>l</sub>*, *MYC* to find out more about apoptosis signals, that impact by nano-capsule & paclitaxel. Moreover by applied Fluorescence microscopy observed apoptosis induction in cells. Nano-capsule is three black poloxamer that was made in university of Zabol. Our finding indicated 6 pathway for Nano-capsule & paclitaxel on SKOV-3 cells line included: 1.dependent caspase pathways contain 3 & 9 caspases 2.Ras pathway 3.Repressive of P3Ik pathway 4.extrinsic apoptosis pathway related to caspase 8 5.MAPK pathway 6.prevent tubulin depolymerization and interfering in TGF- $\beta$  pathway.

**Keywords:** *MYC*, *PRKC<sub>l</sub>*, *MECOM*, MTT assay, qPCR, Caspases 3,8,9 activity, Light microscopy, Fluorescence microscopy