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## Inhibition of K562 Cell Growth by Protoscolex Hydatid Cyst Somatic Antigen

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## Introduction

- In cancer, the ability of cells to divide and grow is typically lost. It leads to the change and destruction of healthy tissues and the formation of a mass called a tumor. Today, many methods are used to cure cancer or increase the patient's life span as much as possible. The purpose of this methods is relieve pain, improve symptoms, and increase the quality of life of a cancer patient, which can be mentioned as follows: surgery, chemotherapy, radiation therapy, hormone therapy, gene therapy, bone marrow transplantation, and immunotherapy. In recent years, various types of research have shown the inverse relationship between some parasitic infections and cancer. Statistical data related to the prevalence of parasitic infections and cancer show a negative relationship between the two



## Material & Method

In this study, hydatid cysts' protoscolex antigens were extracted, purified, and added to K562 cancer cells at three concentrations (0.1, 1, and 2 mg/ml) and on three times (24, 48, and 72 hours). The number of apoptotic cells was compared to the control flask. The antigen concentration of 2 mg/ml was used as a control sample to investigate its cytotoxic effect on the growth of healthy HFF3 cells. Annexin V and PI tests were also performed to differentiate apoptosis from necrosis.



## Results

In flasks treated with hydatid cyst protoscolex antigen, all three concentrations significantly reduced the growth of cancer cells compared with the control flask, and concentration 2 of crude antigen significantly caused the death of cancer cells. Also, more cancer cells underwent apoptosis by increasing the time of exposure to the antigen. On the other hand, flow cytometry results also showed that the amount of apoptosis has increased compared to the control group. In fact, Protoscolex hydatid cyst somatic antigens induce programmed cell death in K562 cancer cells while not having a cytotoxic effect on normal cells.



## Conclusion

Based on the obtained data, it can be concluded that somatic antigens of protoscolex hydatid cyst have an anti-tumor effect, depending on dose and time, and the highest level of cell lethality of the antigen in the concentration range used is 2 mg/ml was observed. It was also found that somatic antigens of protoscolex hydatid cyst induce apoptosis in k562 tumor cells.