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The anti-tumor activities of a type I ribosome-inactivating protein, Trichosanthin, and its toxic mechanism on lymphoma cells

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Abstract

Trichosanthin (TCS) has been a midterm abortifacient traditional Chinese medicine for hundreds of years. In addition, TCS manifests a host of pharmacological properties, including anti-tumor activities. TCS has been reported to inhibit cell growth of a diversity of cancers, including cervical cancer, choriocarcinoma, and leukemia/lymphoma, etc. We explored the growth inhibition effect of TCS on lymphoma cells and its possible mechanism. Different doses of TCS were added to the cultured non-Hodgkin's lymphoma (NHL) cell lines. The results showed that TCS could inhibit the proliferation of all NHL cells used in the experiment. And the growth inhibition activity was associated with the expressions of Mcl-1, Bcl-2 and Puma. Flow cytometric analysis disclosed that TCS mainly induced apoptosis. Furthermore, the TCS-induced apoptosis was attributed to the activations of caspased-3 and PARP-1. Therefore, TCS can inhibit NHL cell growth through inducing apoptosis, and the expression of Mcl-1, Bcl-2 and Puma maybe predicts its efficacy. These research progresses may provide an insight into cancer research and treatment as well as disclose new pharmacological properties of the ancient Chinese medicine.

Biography

Professor Sha has studied ribosome-inactivating proteins, including the traditional Chinese medicine, trichosanthin, and their biological toxicities on neurons and cancer cells for about 15 years, during which time she has authored more than 50 peer-reviewed reports. He has served on the editorial boards for the *Neural Regeneration Research*, and he is an Editor for *Fasciology*. Dr. Sha is a member of the American Association of Anatomists and the Neuroscience Society of Hong Kong, and she has served on numerous review committees, including the Nature Science Foundation of China (NSFC) and the Science and Technology Renovation Committee of Shenzhen.