

Phytochemicals in cancer treatment

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Description

Cancer is a serious health problem and remains the leading cause of death worldwide. The development of large number of anti-cancer drugs is due to the molecular mechanisms of cancer progression. In order to improve the efficiency, the new strategies and new chemopreventive agents are needed to complement current cancer therapies. The natural compounds in plants are called phytochemicals and are an important resource for new drugs and a source of cancer treatment. The most common plant-derived anti-cancer drug is Paclitaxel (Taxol®) which is taxane diterpene found in extracts from the bark of *Taxus brevifolia* Nutt. also known as Western Yew was first reported by Wani et al. in the year 1971.

Action of phytochemicals

These phytochemicals usually act by regulating the molecular pathways involved in cancer growth and progression. Increasing antioxidant status, inactivating carcinogens, inhibiting proliferation, inducing cell cycle arrest and apoptosis, and regulating the immune system are some of the mechanisms that are involved. The main purpose of this is to describe our understanding of the active compounds in natural products. It expands the field of phytochemistry research not only because of its scientific principles, but also because of its potential as a medicine. The anti-cancer phytochemicals evaluated at the preclinical and clinical level. Phytochemicals and derivatives present in plants are promising options to enhance the therapeutic effect of cancer patients and reduce adverse reactions. There are many of the phytochemicals which are naturally occurring biologically active compounds with significant antitumor potential. To develop an ef-

fective and side-effect-free method of cancer treatment based on phytochemicals, natural extracts (from dry / wet plant materials) are first tested for possible biological activity against cancer, and then the active ingredients are tested using phytochemicals based on bioassays, fractionation and distillation. Instruct and test the effects *in vitro* and *in vivo*. In the preclinical part, The phytochemicals through *in vivo* activity reports.

Conclusion

This further emphasizes the phytochemicals evaluated at the preclinical level and also mentions some phytochemicals in clinical trials, as well as brief information on currently used plant anticancer drugs types of medicinal plants continue to be an important source of finding and developing new pharmacological clues. An important asset of drug discovery based on medicinal plants is the existence of ethnopharmacological information, which provides an ideal opportunity to limit the enormous diversity that can lead to more promising results. There is a need for a new comprehensive drug discovery method in which ethnic pharmacology knowledge is supported by a wide range of interdisciplinary forces, including medical chemistry, pharmacology, biochemistry, cell and molecular biology, and natural product chemistry. Full of potential, in addition, advances in analytical techniques and calculation methods, as well as the development of self-learning artificial intelligence systems, will help identify new leading phytochemical entities for pharmacological evaluation.

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