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## Reversal of cancer multidrug resistance by herbal compounds

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The major modalities of cancer treatment include surgery, radiation, chemotherapy, immunotherapy and hormonal therapy L (e.g. for breast and prostate cancer). Presently, biologically targeted drugs (e.g. imatinib and trastuzumab) have become a new group of agents used in cancer therapy. In addition, Chinese herbal medicines are increasingly used as alternative therapies by many cancer patients worldwide, although the clinical efficacy and safety profiles of most Chinese herbal medicines are yet to be established. Many patients respond to anticancer drugs poorly due to the development of multidrug resistance (MDR), which is mainly caused by overexpression of various drug transporters that pump out the cytotoxic drugs from the cancer cells. Multiple ATP-binding cassette transporters such as P-glycoprotein (P-gp/ABCB1), breast cancer resistance protein (BCRP/ABCG2), and multidrug resistance proteins 1 and 2 (MRP1/ABCC1 & MRP2/ABCC2) have been implicated in MDR. Inhibition of pumpmediated drug extrusion is an important approach to overcoming MDR. Although a number of MDR reversers have been identified, most are effective for single transporters only and most that are effective in in vitro assays have proven to be weak MDR reversers in cancer patients and many of them are toxic at high doses. In this regard, there is an increasing interest to seek potent and safe MDR reversers from natural sources. Studies at our laboratory have shown that tanshinone IIA and cryptotanshinone from the commonly used herbal medicine Salvia Miltiorrhiza and glabridin from licorice can inhibit P-gp, BCRP and MRP1 in vitro with IC<sub>50</sub> values of 0.1-2.5 µM which can be readily achieved in vivo when purified preparations are administered at safe dosages. These herbal compounds are well tolerated and do not alter the pharmacokinetics of cytotoxic drugs such as vinblastine and paclitaxel in rodents. Initial studies in nude mice bearing human prostate or colon xenografts demonstrate that these herbal compounds can potentiate the antitumor activity of docetaxel and vinblastine. Chinese herbal compounds may represent a new class of MDR reversing agents with broad-spectrum activity that may be candidates for clinical investigations in cancer patients resistant to conventional chemotherapy. The identified herbal ingredients may be used as lead compounds for the design of new molecules which are more potent and safer MDR reversal agents.

### Biography

Shu-Feng Zhou, M.D. & Ph.D., is presently a Professor of Pharmacology and Molecular Medicine, associate vice president of Global Medical Development, associate dean of International Research, Colleges of Pharmacy and Medicine, University of South Florida, Tampa, Florida. He has published more than 320 peer-reviewed papers in biomedical journals, which has been cited more than 7,500 times by colleagues with an H-index of 44. He is the editor or editor-in-chief of 16 medical journals and the editorial board member of 34 biomedical journals. To date, he has trained 24 Ph.D. students, 12 M.Sc./Honors students, 14 postdoctoral staff and 15 visiting doctors from other countries.

## Therapeutic potential and future prospect of Psidium guajava Linn

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The use of natural products has increased tremendously in the Western world as well as in developing countries or in all over part of world. Via this article, therapeutic potential and future prospect of Psidium guajava L. are described. Psidium guajava L. belongs to the family, myrtaceae. It is a common tree and easily found in a tropical countries or areas. Traditionally, it is a very popular and used from long time in a various systems of medicines like, unani, Siddha, homeopathy and Ayurveda. It is used for treatment of many ailments like diarrhea, dysentery, wounds, rheumatism, lungs problems, ulcers, skin infections, vaginal discharge, epilepsy, menstrual pain, sore throat, mouth swelling, cold and cough, toothache, etc. In present time study, antiproliferative or anticancer activities are undertaken and it is found that anticancer activity of P. Guajava is four times greater than vincristine.

Now, this plant is reported for its various biological activities like antidiarrhoeal, antimicrobial, antitussive, antidiabatic, antihypertensive, immunomodulatory activity, antioxidant, hepatoprotactive, antistress, anticance, antiproliferative activity and this plant holds great attention because of its high therapeutic potential because of high level of phenolic, flavonoids and tannin content and with benefit of its easy availability.