with patients reporting one adverse effect on average (mostly gastrointestinal symptoms which resolved). The patients taking the pharmaceutical therapy had a higher rate of adverse effects classified as moderate to severe by investigators.

This trial was reported in the *Annals of Internal Medicine*, a well known peer reviewed journal, which makes it more broadly available to practitioners of Western medicine. This was attributed to the fact that the study was well designed, rigorous and demonstrated significant results.

Anticancer potential of ginger

Cheng X, Liu Q, Peng Y, Qi L, Li P. 2011. Steamed ginger (*Zingiber officinale*): changed chemical profile and increased anticancer potential. *Food Chem*. Article in press.

Ginger, *Zingiber officinale*, is a widely used therapeutic food and herb. It has been used across India, China and Arabic countries for treating many ailments including headaches, colds, fever, nausea and rheumatic conditions. How the plant is prepared is undoubtedly important in the therapeutic activity however few studies have examined this to date.

Ginger is known to have pronounced antioxidant, anti-inflammatory, antiemetic, antidiabetic and anticancer properties, many related to the diarylheptanoids and gingerol related compounds. Most research focuses on fresh or dried ginger however steaming the root may affect its phytochemical make up and properties as occurs with other herbs such as ginseng root.

In this trial researchers steamed the ginger root at different temperatures for different times (100°C for 1 h or 120°C for 0.5, 1, 2, 4 and 6 h) then air dried the product. The constituents and antiproliferative effect of the fresh, dried and steamed gingers were then quantitatively compared. After the processing 15, 21 and 22 constituents were identified in the fresh, dried and steamed ginger (120˚C 4 h) extract respectively. The researchers chose two of the more well known compounds to assess in each extract: gingerols (6-, 8- and 10-gingerol) and shogaol (6-shogaol). As a general rule the concentration of gingerols decreased with steaming but the level of 6-shogaol actually increased in a time dependant manner and reached the maximum quantity after 4 hr of steaming. Steaming at 120˚C greatly increased the concentration of this compound compared with steaming at 100˚C, suggesting that higher temperatures may be more beneficial for facilitating the conversion of shaogoals from gingerols and producing more concentrated extracts. The level of 6-shogaol in steamed ginger at 120˚C for 4 h was found to be approximately 7 and 12 fold higher than that in dried ginger and fresh ginger respectively.

When steamed extracts were compared with fresh and dried ginger they were also found to have more potent anticancer effects. In human Hela cancer cells proliferation assays exposed to ginger for 24 and 48 hours, the steamed ginger produced stronger anticancer effect than the fresh and dried extracts. This is likely due to the higher amounts of shogaol in the herb, as past studies have shown this to have stronger growth inhibitory effects than gingerols on A-549 human lung cancer cells, SK-OV-3 human ovarian cancer cells, SKMEL-2 human skin cancer cells and HCT-15 human colon cancer cells.

This study provides interesting food for thought on the best forms of ginger (and perhaps other herbs) to use in patients when seeking an anticancer effect.

Antidepressant effects of *Panax notoginseng*

Xiang H, Liu Y, Zhang B, Huang B, Li Y, Yang B et al. 2011. The antidepressant effects and mechanism of action of total saponins from the caudexes and leaves of *Panax notoginseng* in animal models of depression. *Phytomed* 18;731-8.

The root of *Panax notoginseng* (PN), also known as tienchi, sangi or tianqi, is commonly used in traditional Chinese medicine for hemoptysis, hemostatic conditions and hematoma. The main active constituents are similar to those in Korean ginseng (*Panax ginseng*) and American ginseng (*Panax quinquefolium*), being the saponins ginsenosides and notoginsenosides.

Modern research has demonstrated a multiplicity of actions attributable to these compounds in tienchi ginseng including hypoglycemic, hypolipidemic, immunostimulatory, antitumor, anti-inflammatory, analgesic, antioxidant, hemostatic, antithrombotic, antiatherosclerotic, fibrinolytic, antiarrhythmic, hypotensive, estrogen like and even sperm motility enhancing effects.

In this present study researchers in China evaluated the efficacy of tienchi in murine models of depression. They used an extract of saponins from the caudexes and leaves of PN (SCLPN) containing high amounts of the ginsenosides Rb3, Rb1, Rc and the notoginsenoside Fc which are highly bioactive and usually found in lower amounts in extracts of the roots alone.

The scientists put the rats under chronic stress for three weeks. Those animals that exhibited signs of depression/ anhedonia (tested via the sucrose preference test) were divided into three groups. These groups received either vehicle (n = 10), fluoxetine (1.8 mg/kg, n = 10) or SCLPN (70 mg/kg n = 12) once a day and remained under chronic stress for 4 weeks. Control groups received distilled water.

Following administration of the medications the rats were put through various tests and their responses examined. SCLPN seemed to exert antidepressant activities on the animals. Those receiving this extract demonstrated reduced immobility time in the forced swim test, reduced sucrose preference and reversed decreases in locomotor activity. Researchers attribute the effect to the particular mix of saponins in the extract.

Whilst the exact mechanism of action is uncertain, a number of experiments in the current study suggest that SCLPN exerted its antidepressant like effect by increasing the levels of serotonin, dopamine and noradrenaline. The animals treated with this extract showed increased head twitches similar to the positive control drug, indicating an increase in serotonergic activity in vivo. However this only held true at lower doses whilst higher doses resulted in fewer head twitches suggesting that the effects on the serotonergic system are more complex than previously thought. Other parts of the study showed that other mechanisms of action may include enhanced locomotor activity (via the dopaminergic system), inhibition of [Ca2+] elevations and increased expression of BDNF which plays a critical role in hippocampal neurogenesis.

This saponin containing extract of tienchi ginseng exerted antidepressant effects in murine models via a number of mechanisms including neurotransmitter modulation and neuroprotective effects.

Antiallergic properties of lemon quince

Gründemann C, Papagiannopoulos M, Lamy E, Mersch-Sundermann V, Huber R. 2011. Immunomodulatory properties of a lemon-quince preparation (Gencydo®) as an indicator of anti-allergic potency. *Phytomed* 18;760-8.

In the Western world there has been a rise in the rates of allergic diseases over the past few decades, particularly rhinitis and asthma. In part the initiation of allergic reactions (both early and late phase) is due to the release of soluble mediators of inflammation from basophils, mast cells and nose and lung epithelial cells. In Europe around 30% of patients with allergic conditions use complementary therapies to manage them, mostly in order to avoid side effects.

One of the more commonly used products is Gencydo®, an aqueous quince extract (*Cydonia oblonga fructus* 1:2.1) combined with lemon juice (*Citrus limon* succus). This is based on a traditional medicine used in the area for centuries. In past trials this product has shown positive outcomes on grass pollen allergy and seasonal allergic rhinitis.

The aim of the present study was to analyse the effects of complementary medicine on the release of soluble mediators from basophilic cells, mast cells and lung epithelial cells in attempts to further clarify the mechanisms of action. Both human and murine cell lines were used to assess the effects on different body tissues.

Results demonstrated a Gencydo® induced inhibition of the release of soluble mediators from basophilic cells, mast cells and lung epithelial cells. In some areas the effects elicited were comparable to those of a number of pharmaceutical preparations used in treating asthma and allergic rhinitis including azelastine and dexamethasone. In addition to inhibition of degranulation of basophils and mast cells, Gencydo® inhibited IgE mediated release of GM-CSF, a cytokine that promotes eosinophil activation and survival which may contribute to airway inflammation in asthma.

This data on mode of action suggests that Gencydo® may affect chronic allergic disorders beneficially via the inhibition of inflammatory and allergic mediatior release.

Hypolipidemic and antioxidant effects of notoginseng

Xia W, Sun C, Zhao Y, Wu L. 2011. Hypolipidemic and antioxidant activities of Sanchi (Radix Notoginseng) in rats fed with a high fat diet. *Phytomed* 18:516-20.

Sanchi is a traditional Chinese medicine prepared from the roots of *Panax notoginseng*. It is indicated for a number of cardiovascular conditions and is thought to increase coronary blood flow, reduce myocardial oxygen consumption, reduce bleeding, reduce blood pressure and counteract thrombus and excessive lipid peroxidation.

Cardiovascular disease (CVD) presents a major health burden worldwide and hyperlipidemia is a known risk factor for the development of these conditions including atherosclerosis. Free radical mediated peroxidation of polyunsaturated fatty acids of LDL and VLDL particles is proposed as a major contributor to the progression of atherosclerotic lesions. Agents that can lower blood lipid levels and prevent oxidation from occurring may help to reduce the preponderance of CVD within the community.

Researchers in China assessed the effects of sanchi on rats fed a diet of 10% pork fat (w/w) (on top of a basal diet containing 5 g fat/100 g) for four weeks. Experimental parameters included serum lipid levels, hepatic lipid peroxidation, levels of HMG-CoA reductase and antioxidant profiles. Rats were randomised to a control (normal diet) group, an untreated hyperlipidemic group (HL), hyperlipidemic animals with a high fat diet including 0.25% w/w sanchi powder (HLL), 0.5% w/w sanchi powder (HLM) and 1% w/w sanchi powder (HLH).

Compared with rats on a normal diet, those on a high fat diet weighed significantly more. Sanchi significantly attenuated this weight gain in the active groups. Administration of the herb at higher doses significantly reduced levels of LDL cholesterol, total cholesterol and triglycerides in hyperlipidemic rats. There was also an increase in levels of beneficial HDL cholesterol.

After 28 days of administration, hepatic HMG-CoA reductase levels were significantly elevated in the animals on a high fat diet. This was markedly reduced in those receiving Sanchi in the chow. The supplement also reduced levels of lipid peroxidation and increased the activity of antioxidant enzymes.

It appears that sanchi is likely to reduce the risk of coronary heart disease associated with oxidative stress and hyperlipidemia.