

Research Abstracts

Siberian Ginseng

Ginseng and the hypothalamic-pituitary control of stress

There are a group of so-called tonic remedies in Far Eastern medicine which are traditionally viewed as harmonizing or adjustive. Ginseng and eleutherococcus are the best known, and there is evidence that they increase arousal, stamina and stress resistance. We have attempted to explore the relationship between the behavioral and the stress effects, and to relate this to traditional concepts. In one series of experiments mice were given ginseng throughout their lifespan. At intervals their behavior response to mild stress was examined and found to be exaggerated compared to controls without ginseng. However, normal ambulatory behavior in the absence of stress was unaffected. A second series of experiments indicated that the binding of corticosteroid to certain brain regions was increased in adrenalectomized rats given ginseng saponin, compared to saline treated controls. This can be interpreted as a result of an increase in hypothalamic-pituitary-adrenal sensitivity caused by ginseng saponin. This is in accord with traditional concepts of the use of these remedies. Fulder SJ. *Am J Chin Med* 1981;9(2):112-118.

Role of pituitary-adrenocortical system in body adaptation abilities

The role of the pituitary-adrenocortical system (PACS) in body adaptation abilities was studied on rats. The adaptation abilities were tested by a body working capacity (the running time in a treadmill till fatigue). The single administration of ginseng results in the increase of a working capacity up to 132%, the seven-day one up to 179%. This makes it possible to speak about two levels of adaptation, each being characterized by a specific PACS status and a degree of PACS involvement in adaptation abilities. The single administration of ginseng is accompanied by an increase in the basal level of ACTH and corticosteroids. At a 7-day administration the basal level of ACTH and corticosteroids does not change but PACS reactivity to the immobilising stress increases. The preliminary administration of 15 mg/100 g b. w. hydrocortisone, 7 days before testing of the working capacity and PACS status, causes the block in PACS function. It results in the decrease of the basal corticosteroid content in plasma and the inability of stress factor to cause the rise in the corticosteroid level. The PACS blocking results in the decrease of a working capacity in normal rats not treated with ginseng and in animals singly treated with ginseng. The PACS blocking effected the increment in a working capacity caused by a 7-day ginseng administration to a lesser extent, however, the decrease in a working capacity took place even in this case. The conclusion is made that PACS status changes with the transition of a body to a higher level of adaptation: PACS excitation occurs or the system excitability increases. Filaretov AA, Bogdanova TS, Podvigina TT, Bodganov AI. *Exp Clin Endocrinol* 1988 Dec;92(2):129-136.

Flow-cytometric studies with eleutherococcus senticosus extract as an immunomodulatory agent

A placebo-controlled study of the effect of an Eleutherococcus senticosus extract (Eleukokk) on the immune system was performed with 36 healthy volunteers utilising quantitative multi-parameter flow cytometry with monoclonal antibodies directed against specific surface markers of human lymphocyte subsets. Volunteers in the verum group received 10 ml of an ethanolic (vincamine free) eleutherococcus senticosus preparation, 3 times daily for 4 weeks. In the placebo, the eleutherococcus extract was substituted by additional wine, resulting in identical final concentrations of ethanol in both preparations. The purpose of the double-blind study was the demonstration of possible effects on the cellular immune status, as determined by quantitative flow cytometry. The most salient feature in the verum group was a drastic increase in the absolute number of immunocompetent cells, with an especially pronounced effect on T lymphocytes, predominantly of the helper/inducer type, but also on cytotoxic and natural killer cells. In addition, a general enhancement of the activation state of T lymphocytes was observed. No side effects were observed during the trial or afterwards (observation period 6 months). Bohn B, Nebe CT, Birr C. *Arzneimittelforschung* 1987 Oct;37(10):1193-1196.

Immunostimulant action of polysaccharides (heteroglycans) from higher plants. Preliminary communication

From the water or alkaline-water extracts of Echinacea purpurea (L.) Moench and -angustifolia DC., Eupatorium cannabinum L. and -perfoliatum L., Chamomilla recutita (L.) (Rauscher), Calendula officinalis L., Baptisia tinctoria (L.) R.B., Achyrocline satureoides DC., Arnica montana L., Sabal serrulata Roem et Schult. and Eleutherococcus senticosus Maxim. polysac-

charide fractions with molecular weights in the range of 25 000 to 500 000 and higher have been isolated, which, according to the granulocytes- and carbon clearance tests, showed significant immunostimulating activities. The isolated compounds belong to the group of water-soluble, acidic heteroglycanes. The linkages in the different polysaccharides do not represent a uniform structure type. Wagner H, Proksch A, Riess-Maurer I, Vollmar A, Odenthal S, Stuppner H, Jurcic K, Le Turdu M, Heur YH. *Arzneimittelforschung* 1984;34(6):659-661.

Panax ginseng and Eleuthrococcus senticosus extracts—in vitro studies on binding to steroid receptors

We have examined the binding of 44% saponin from Panax ginseng, and extracts from Eluthrococcus senticosus (Siberian ginseng) to classical steroid receptors in vitro. Both extracts had demonstrable affinity for progestin, mineralocorticoid and glucocorticoid receptors; the Siberian ginseng also bound to estrogen receptors. Highest affinity binding was to glucocorticoid receptors, with an approximate K_i of 8×10^{-6} M for Panax ginseng. Such interactions may explain the reported glucocorticoid-like effects of ginseng in vivo. Pearce PT, Zois I, Wynne KN, Funder JW.

Endocrinol Jpn 1982 Oct;29(5):567-573.