

Background

A large proportion of all illness (perhaps 70-80%) is believed to occur because of stress - because the level is too high, and/or too long-term. High-stress modern living is probably the main factor causing chronic disease. The three phases of stress progression are 1. **Alarm phase** – When some new stress factor strikes the organism it causes a sudden release of internal stress-hormones – corticosteroids and catecholamines. If the stress is very intense it can damage the regulatory systems of the organism permanently and at once (for example in case of exposure to high levels of nuclear radiation); but if you are lucky, or if you are taking adaptogens, you will smoothly progress further to the "adaptation phase". 2. **Adaptation phase** – If the stress factor continues (for example, in sport it might be heavy athletic training) our body learns to tolerate the stressful stimulus – "adapt" - and increases its resistance to the stress factor. The "adaptation phase" is usually a safe period. The more we can stay in the "adaptation phase", the better. 3. Finally, the **exhaustion phase** appears, when the organism fails to fight stress any more and simply gives up. In this "exhaustion phase", disease symptoms rapidly appear and get worse.

Diseases associated with stress may appear in the first "alarm phase", but they mainly appear in the third "exhaustion phase" when the organism cannot fight stress any more. This third phase usually develops after a period of months or years. Everything depends on the duration of the "adaptation phase". Sometimes the organism may be lucky and escape this third phase altogether, provided that it can keep the stress under control. We can help to achieve this by taking adaptogens; they can help us to stay in the "adaptation phase" for as long as possible.

Fortunately Mother Nature has an answer to this challenge - a unique class of herbal products called "adaptogens". As it was shown by the researches, especially of Russian scientists, the main effects of adaptogens are an increased availability of energy during the day, a reduction of stress feelings, increased endurance, greater mental alertness, and deep and restful sleep. Adaptogens have the most broad-spectrum healing properties of any herbal medicines, but their unique value is that they specifically relieve stress. Also, adaptogens significantly accelerate the recovery process after illness. According to modern science adaptogens are natural plant products that increase the body's ability to cope with internal and external stress factors, and normalize the functions of the organism. They help maintain the stable internal environment inside the organism known as homeostasis, as well as to establish a new specific status of the organism called the status of a non-specific increased resistance. An important characteristic is that they are safe, possessing few known side-effects.

Taking adaptogens, you will be able to cope with stress better. The initial "alarm phase" will smoothly progress to the "adaptation phase". Adaptogens can help you to stay in the safe "adaptation phase" for a much longer time or even permanently, so preventing your organism from proceeding further to the extremely dangerous "exhaustion phase".

History

Adaptogens were discovered in 1947 by the Russian scientist Dr. Nicolai Lazarev, who in fact coined the name "adaptogen". Dr. Lazarev was also the mentor of Dr. I. Brakeman, who conducted extensive research on adaptogenic herbs. Dr Brakeman's first major focus was the now well-known Panax Ginseng, also called

Korean or Chinese Ginseng. This worked, but unfortunately it has a few drawbacks that have since become evident. It sometimes has side-effects such as causing over-excitement or constipation, and when taken it can be too heating and stimulating to some people. Dr. Brakeman soon moved on to other herbs and became recognized as the world's leading expert on adaptogens. Since then more than a thousand experimental and clinical studies on adaptogens have been done – most of them in Russia and Germany. Most of these studies have shown the outstanding stress-protective and immune-system enhancing capacities of adaptogens.

The names of what are now called "first-generation" adaptogens: *Panax Ginseng*, *American Ginseng*, and *Japanese Ginseng*. The most promising adaptogens of the "second generation today are probably *Eleutherococcus senticosus* (Siberian Ginseng), *Rhodiola rosea* (Golden root) and *Rhaponticum carthamoides* (Leuzeae).

"Second-generation" adaptogens.

1. *Eleutherococcus senticosus* (Siberian Ginseng)

This herb actually has as many beneficial properties as common Ginseng, but without being as stimulating. This herb has become very popular in Russia and in the U.S.A. It has been extensively researched and tested on humans, and has proved to be very effective and safe. *Eleutherococcus* shrubs grow up to 9 feet tall; they have rough-edged arrays of leaves, and small white flowers which give dark blue fruit. Siberian Ginseng contains seven active substances, referred to as *eleutheroside A, B, C, D, E, F* and *G*. Total eleutheroside content of the root is up to 2%. Certified potency Siberian Ginseng extract is standardized for a minimum content of eleutheroside B of 300 mcg, and eleutheroside D - 400 mcg per 100 mg (One tablet may typically contain 100mg – 250mg of extract). These active ingredients are specific to *Eleuthero* and are not present in the *Panax* species (American, Chinese, Korean or Japanese Ginseng). *Eleutherococcus* has numerous clinically-proven beneficial properties, such as relief of insomnia, various types of neuroses, hypertension, hypotension, acute pyelonephritis (kidney problems), chronic bronchitis, and even of cancer. In numerous clinical trials it has been shown that Siberian Ginseng can increase the ability of humans to withstand many adverse physical conditions such as extra workload, motion, noise, or heat. It increases mental alertness and work output, improves the quality of work produced under stressful conditions, and improves athletic performance.

2. *Rhodiola rosea* (Golden root)

This is a perennial plant with red, pink, or yellowish flowers. It is no biological relation of the "common" rose, but due to its similar fragrance it has been used as a substitute for Attar of Roses. One of the greatest things *Rhodiola* does is enhance mental and physical performance. It has been widely used by Russian athletes to increase energy. *Rhodiola* is cardio-protective, normalizing the heart-rate immediately after intense exercise. It improves nervous system and mental functions such as memory by increasing blood-supply to the muscles and brain, and also increases protein synthesis, (1,2,3). *Rhodiola rosea* has extraordinary pharmacological properties as an anti-mutagen and anti-depressive agent. In this respect *Rhodiola rosea* is much more powerful than other adaptogens. In one study done by O.M. Duhan and colleagues, the anti-mutagenic activity of *Panax Ginseng* and of *Rhodiola rosea* were

compared (4). It appeared that the extracts of *Rhodiola rosea* have the higher capacity to counteract gene mutations induced by various mutagens (up to about 90% inhibition in some cases). The anti-depressive and anti-stress activity of Golden root is higher than that of *St. John's Wort*, *Ginkgo biloba* and *Panax Ginseng*. In one clinical trial 150 individuals suffered from depression took *Rhodiola rosea* extracts for a period of one month. At the end of that period two-thirds of them had full remission of clinical manifestations of depression, and had become more active and more sociable. Daytime weakness and general weakness disappeared. Furthermore, *Rhodiola rosea* is *four times* less toxic than *Panax ginseng*. The main **active components** that are responsible for the extraordinary potency of *Rhodiola rosea* are *rosavin*, *salidroside*, *rosin*, and *rosarin*. Quality *Rhodiola rosea* extract should contain at least 2% rosavin and 0.8% salidroside.

The researches of Russian scientists (5) conducted in Siberia proved the antitumoral properties of *Rhodiola rosea*. The most important is the fact that the application of *Rhodiola rosea* decreases the probability of metastatic spreading. The patent for application of *Rhodiola rosea* as the antimetastatic agent was received.

3. *Rhaponticum carthamoides* (Leuzeae)

Leuzea is a perennial herb of the *Compositae* family, which grows mainly in mountain regions in Siberia, Altai, and Western Sayani. Its height is approximately 2-3 feet, and its single-headed flowers are purple. *Rhaponticum* derives its traditional name *Maral Root* from the famous Mongolian, Dzhamtsyn, who spoke about a plant that imparted strength to the maral deer who fed on it. *Rhaponticum* is an old folk medicine for fatigue. It has been traditionally used as a stimulant, for overcoming impotence, and to assist convalescence from long illness. Russian and Eastern researchers have found that *Rhaponticum* has a beneficial effect on memory and learning, and can help break addictive behaviors. It increases working capacity in tired skeletal muscles, relieves neurosis, and benefits anabolic and adaptogenic processes (6). It enhances speed, strength, and functioning of the muscle system. *Rhaponticum carthamoides* has been used by Eastern Bloc athletes as a natural anabolic, adaptogen, and bio-stimulant. An important compound in *Rhaponticum carthamoides* is Ecdisterone.

Adaptogens and oncology

At present time adaptogens are widely used in oncology as

1. the agents preventing neoplasmsgenesis;
2. the agents for treatment of nonmalignant tumor;
3. the agents for the protection of the organism during chemotherapy and radiotherapy;
4. the agents for the prophylactic of metastatic spreading and tumor recidivation.

Adaptogens and sport

Adaptogens help you cope with stress-related situations so you can train harder, recover more quickly, and achieve more of your body's full performance potential. *Leuzeae* has a marked anabolic effect, and aids the body in the synthesis of

muscle protein. Its extract, when included in the diet, has a pronounced tonic effect and has abilities to protect the bodily system from environmental stress. It may help the body to re-build damaged muscle tissue. Adaptogens such as *Leuzeae* are often prescribed to elite athletes by sports physicians in order to replenish the depleted mental and structural reserves exhausted during hard training. After taking *Rhaponticum carthamoides* extract an increase in muscle component and a decrease in fat tissue have been observed in scientific studies (6).

Bibliography

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