

AYURVEDIC ADAPTOGENS AND "BIOPROTECTANTS"

One of the most important goals of modern health care, in addition to prevention of disease, is the development of active treatments that control illnesses with minimum side effect to the body.

Both preventive and active pharmacological treatments have been areas of long-standing expertise in Ayurvedic medicine, the ancient medical system of India. As a rule, treatments in Ayurveda have been designed to be harmless while still offering broad regulating effects for the body. This particularly applies to the group of natural treatments termed "vitalizers"—defined in 1000 B.C. by the authority on Ayurvedic medicine, Caraka Samhita. The concept of a vitalizer is similar to, and probably inspired the contemporary idea of, "adaptogen," a term that was proposed in the 1950s by a Russian scientist, Lazarev, of Russia's Institute of Marine Biology, Vladivostok.¹

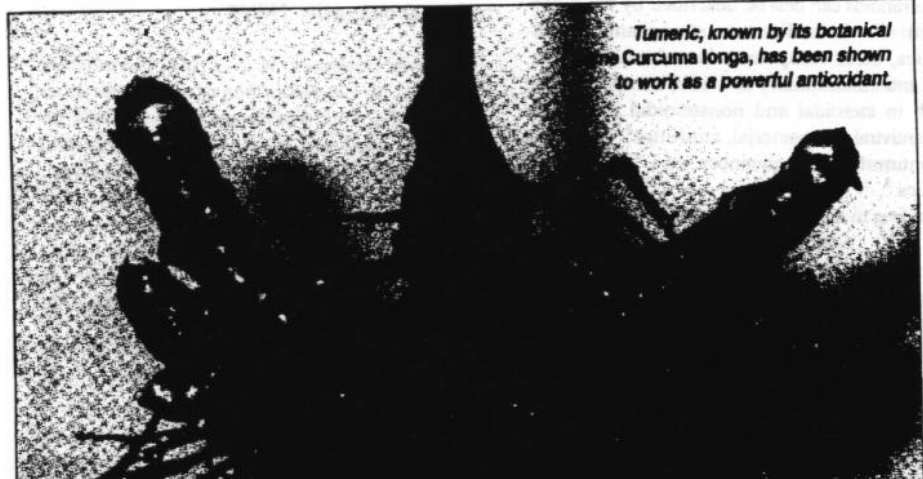
According to Lazarev, an adaptogen is any pharmacological agent that results in adaptive reactions to physical and psychological stress.

The work of Lazarev has been continued and expanded by his disciple, Izrail Brekhman. Brekhman's views on adaptogens have also been influenced by the work of Hans Selye, the endocrinologist who pioneered research on stress in the 1930s, and by Linus Pauling, a physicist and champion of preventive medicine. In the early 1950s, Selye was among the first to suggest the importance of the pharmacological control of stress, using the expression "adaptation energy" to explain the energy needed to cope with a broad range of psychological and physical stresses²

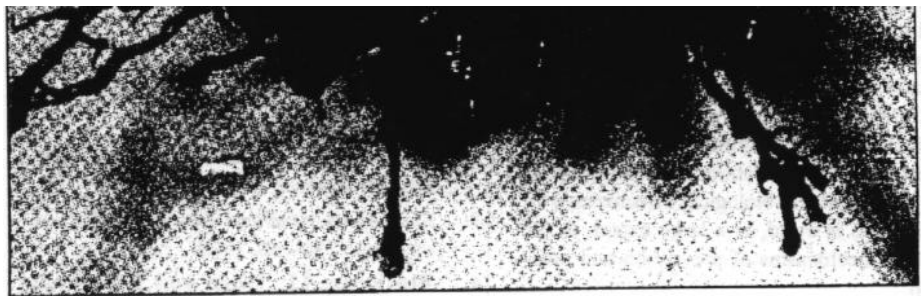
In his book *Man and Biologically Active Substances*, Brekhman describes the ideal characteristics of pharmacological agents considered as adaptogens:

1. Safety of the adaptogen's action on the organism;
2. A wide range of regulatory activity, but manifesting its action only against the actual challenge to the system;
3. Act through a nonspecific mechanism to increase the nonspecific resistance (NSR) to harmful influences of an extremely wide spectrum of physical, chemical and biological factors causing stress,
4. Has a normalizing action irrespective of the direction of foregoing pathological changes.

While the most studied and popular adaptogen is ginseng root extract, there are several examples of natural components from plant and animal



Turmeric, known by its botanical name *Curcuma longa*, has been shown to work as a powerful antioxidant.



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kingdoms that have been recognized as adaptogens.³

Ashwagandha

Withania somnifera (fam. Solanaceae), also known by its Sanskrit name ashwagandha, has long been used in Ayurvedic medicine as a rejuvenative and a vitalizer. In a study that employed classic experimental evaluation of adaptogens, ashwagandha increased physical endurance of tested animals, prevented stress-related disorders (e.g., gastrointestinal ulcers), and prevented stress-related deletion of two important substances in the body, vitamin C and the hormone cortisol.⁴ Both substances are part of the "adaptation energy" system and play a critical role in the body's response to a variety of stressful stimuli. The adaptogenic mechanism of ashwagandha was studied and compared to the similar mechanism of ginseng.⁶ In a 40 day double-blind study, the effects of

ashwagandha and ginseng on the mental acuity and psychomotor coordination and performance of healthy volunteers were evaluated. The study showed that ashwagandha was equal to or better than ginseng in improving problem-solving ability, reaction time and physical performance under the applied experimental conditions.

Additional understanding of the adaptogenic properties of ashwagandha comes from a double-blind clinical study assessing the effect of this herb on the aging process in 101 healthy volunteers.⁵ The group of volunteers, 50 to 59 years old, agreed to take ashwagandha daily for a year. As a result of this regimen, the process of aging as evaluated in certain parameters was significantly slowed down as compared to individuals receiving a placebo. For example, levels of the pigment melanin in the hair, which declines with age and is responsible for graying, was increased in the group receiving ashwagandha. Aging-related loss of calcium, assessed in nails, was significantly less in the group receiving ashwagandha. Up to 70 percent of individuals who received ashwagandha reported increased libido and better sexual performance.

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Curcuminoids

Another example of an adaptogen-like botanical with long-standing use in Ayurvedic medicine is *Curcuma longa* (fam. *Zingiberaceae*), or turmeric, known for its brilliant yellow color. Its active principles are known as "curcuminoids," which are recognized for their broad biological activity and safety of use. The biological activity of curcuminoids can best be described by the word "protective". In addition to strong antioxidant properties, these compounds have been found to possess anti-inflammatory activities comparable in strength to steroidal and nonsteroidal drugs, as well as antiviral, antibacterial, antifungal, antiparasitic, antimutagen, anticancer and detoxifying properties.⁷

According to our original research-preliminary results of which are hereby reported-curcuminoids possess distinct mechanisms that may explain their protective qualities.⁷ This protective activity has been defined by testing one of the best-known properties of curcuminoids-their antioxidant properties. The two distinct modes of curcuminoid antioxidant action have been identified as prevention of the formation of free radicals and intervention to neutralize the already formed free radicals by the process of free-radical scavenging.

Research showed that curcuminoids had significant activity in both antioxidant modes of action: prevention and intervention. It should be noted that some other natural antioxidants do not offer a combined prevention and intervention activity and that the biological effectiveness of curcuminoids is owed, to a large extent, to the combined mechanisms of prevention and intervention.

Since curcuminoids may protect the integrity of the body by preventing free-radical assault and by intervening to stop the assault, it is proposed to name curcuminoids and any similar compound a "bioprotectant."

The outcome of ongoing research could show that the bioprotectant activity is a more practical concept than that of the adaptogen, or that the bioprotectant mechanism describes a different biological action than that of an adaptogen.

Safe And Broad Action

The Ayurvedic adaptogenic and/or bioprotectant compounds are not only single herbs, but, typical of this traditional medicine, a multicomponent herbal and mineral formula. The ingredients in such formulas are usually arranged according to their properties into three therapeutic groups: main-acting ingredients, supporting main-acting ingredients and those that improve gastrointestinal absorption and prevent any untoward effects. The synergistic and antagonistic mechanisms among the various components ensure the safety and broad action in the body.

One example is the Ayurvedic formula *Gabyr-Nirynga*, or in translation, "camphor combina-

tion."¹⁰ It consists of 23 herbs, natural camphor and calcium sulfate. Camphor combination has been clinically proven effective in four independent double-blind studies in Europe for a wide range of circulatory disorders.

If the difference between health and disease could be imagined as the difference between a solidly constructed structure and a structure unstable due to some missing elements, then an adaptogen or bioprotectant could be seen as the missing element(s) that stabilize the structure and make it strong again. NSN

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