

Managing Stress with Adaptogens

Understanding this increasingly popular category and how it can help your customers.

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A single common denominator in our lives is stress. It pervades the life of every individual in a variety of ways and it can affect our overall health in negative ways. Chronic stress creates overstimulation that exhausts us physically and impacts our immune function, making us vulnerable to disease. There is, however, a class of botanicals called adaptogens that can help our bodies better respond to stress; in other words, adapt. Adaptogens may not yet be a buzz word for your customers but many herbs with adaptogenic properties, such as ashwagandha, have made their way into RTD beverages, falling in line with the on-the-go consumer as well as stress-targeting dietary supplement formulas. “We predict continued (and progressively innovative) applications of functional mushrooms across food, beverages, and dietary supplements, plus the integration of other ingredients that focus on adaptogenic properties,” reports sales tracking firm SPINS, which placed adaptogens at the top of its Top 10 Trend Predictions for 2018.

What are Adaptogens?

You may already be consuming an adaptogen if you incorporate Ayurveda or Traditional Chinese Medicine (TCM) into your life. “In TCM they are known as kidney yang tonics and in ayurveda they are called rasayanas,” explains David Winston, RH(AHG), president, Herbalist & Alchemist, Inc., Washington, NJ. “While some kidney yang tonics and rasayanas are adaptogens, many are not.”

The classification of adaptogen is a relatively recent one. "Adaptogen is a modern term first used in 1961 by the Soviet researcher Israel Brekman, Ph.D. and it overlaps the concepts used in traditional medicine, but is different in many ways," says Winston. Mary Bove, ND, director of medical education for Gaia Herbs, Brevard, NC, explains that the Soviet Union was performing studies from the 1950s until the 1980s on the effects of herbs on athletes and cosmonauts to establish the adaptogenic classification.

"They said the classification had to meet three characteristics in order for a plant to be considered an adaptogen: it had to be non-toxic to the body's physiology, the second was that it increased the body's resistance to adverse influences — so all kinds of stressors whether chemical or emotional, physical — and the last is that they would have an overall normalizing effect without aggravating or having side effects or adverse reaction," says Bove. This detail of a normalizing effect is very interesting because the botanical's effect may depend on one's physiological state. "Somebody who's feeling fatigued and low may take an adaptogen, energizing them," she explains. "If someone else is all wound up and anxious and has inertia in their life from those symptoms, they may take that same adaptogen and find that it chills them out and it allows them to go on with their lives without that anxiousness."

"Interestingly these compounds are stimulated by stress and taking an adaptogen is a little like getting a vaccine, in that they prime the body to respond more effectively and appropriately to acute or chronic stress," says Winston.

In order to be an adaptogen, an herb must also be capable of re-regulating the hypothalamic-pituitary-adrenal (HPA) axis and the sympatho-adrenal system, which control the fight or flight response in people, explains Winston. "In new research it has been shown that these herbs also work on a cellular level preventing stress-induced shutdown of our mitochondria, the cell's 'engines,'" he adds. "This explains why adaptogens can be so useful for conditions such as fibromyalgia and Chronic Fatigue Immune Deficiency syndrome (CFIDS), both of which are caused by HPA axis depletion and cortisol-induced mitochondrial dysfunction."

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The HPA axis is a loop of communication between the hypothalamus — which basically assesses your safety and sends messages to the adrenal glands (a part of the endocrine system) via the pituitary glands to release stress hormones such as cortisol or epinephrine (adrenaline) — when presented with stressful stimuli. This is an exceptionally important function when in genuine danger and experiencing intermittent stress (like an impending deadline that lights a fire under your behind), however, when stress is chronic, so is the release of these stress hormones (1).

This can make a person irritable throughout the day, extending beyond the work day, causing trouble sleeping because too much cortisol in the body prevents the body from producing enough melatonin and serotonin, which are hormones that enable sleep and happiness. This then creates a vicious cycle because studies have also shown that sleep deprivation can itself mildly activate the HPA axis (1). This over-activity of the adrenal glands is called “adrenal fatigue,” though it’s more like adrenal dysregulation and we’re the ones that are fatigued as a result. Adaptogens can be an excellent way to regain homeostasis from chronic stress or help the body better adapt to the inevitable stress we will experience.

“Adaptogens actually help to balance adrenal function by calming and nourishing the adrenal glands, and thus counteracting the adverse effects of stress — i.e. increased blood sugar and cholesterol levels, weight gain, elevated blood pressure, etc.,” says Shaheen Majeed, president worldwide, Sabinsa Corp., based in East Windsor, NJ. “Additionally, they enable the body’s cells to access more energy; help flush toxic byproducts of the metabolic process out of the body. Most of the adaptogens are also well-known for their antioxidant and anti-inflammatory potential, which facilitates the body’s ability to fight against a range of free radicals and inflammatory agents.”

Of course, not all adaptogens are created equal. “Some are stimulating, some calming, some are warming, others cooling, some drying and others moistening,” says Winston.

Omar Cruz, VP of botanical sciences, Himalaya Herbal Healthcare, Sugar Land, TX, agrees. “Although adaptogens in the West are categorized similarly, in both Ayurveda and TCM, each adaptogen is wholly unique and has its own application and promise,” he explains. “Fortunately, adaptogens are often included in traditional Ayurvedic and Chinese formulas so they can fine tune their use to treat both mind and body in any variety of disease. In fact, Ayurveda believed that most ailments come from the mind and as such adaptogens were generally the first strategy for intervention.”

“They work through different channels,” says Bove. “There are a number of different mechanisms that are involved in our stress response modification and not every adaptogen covers that broad spectrum. Using a couple of adaptogens together in a formula gives a better outcome because it is eliciting more of those mechanisms that are being challenged when a person is under stress.”

Getting to Know Your Adaptogens

Ashwagandha. Scientifically known as *Withania somnifera*, ashwagandha has recently attained a great deal of recognition and wider use. “Ashwagandha provides a wealth of potent natural compounds, including withanolides that boost resistance to fatigue, stress, and the other physical and psychological factors that can make you feel depleted,” says Cheryl Myers, chief of education and scientific affairs at EuroPharma, Inc., based in Greenbay, WI. Myers cites a 2012 prospective, randomized double-blind, placebo-controlled study with dramatic results published in the *Indian Journal of Psychological Medicine* (2). In it, 64 subjects with a history of chronic stress were given either 300 mg of ashwagandha or placebo, physiological readings were taken and surveys assessing levels of stress, anxiety and depression were taken at baselines and following the 60-day period. In the ashwagandha group, subjects experienced a 44% decrease in their perceived stress compared to a 5.5% in the placebo group

and the results of the generalized health questionnaire with four distinct subsets for stress (somatic, anxiety & insomnia, social dysfunction and severe depression) showed remarkable improvement across all subsets.

Somatic, or physical symptoms, decreased by 76%, anxiety and insomnia decreased by 69%, social dysfunction by 68% and severe depression by 79% compared to 5%, 11%, 3% and 10% in the placebo group subsets, respectively. Physiological tests also showed that serum cortisol was significantly reduced in the ashwagandha group by 27% compared to 8% in the placebo group. It should be noted that ashwagandha and other adaptogenic herbs have not been approved for the treatment of depression and anyone suffering from symptoms of depression should seek professional help.

Rhodiola. Scientifically named *Rhodiola rosea*, this herb comes out of Scandinavia and Russia, therefore it lands outside the Ayurveda, TCM scope. However, Winston points out, one should not confuse this herb with the Chinese varietal, *R. crenulata*, which is not as effective as *R. rosea*.

“Early studies showed that rhodiola promoted norepinephrine, dopamine, and serotonin neurotransmitter activity, so it was valuable for individuals whose roles required planning, memory, and a calm, focused attention to detail,” explains Myers. “Rhodiola includes salidroside and the compounds rosavin, rosin, and rosarin, which are responsible for the cognitive, stress-reducing, and energizing effects of the herb. Like ashwagandha, rhodiola works through the HPA-axis and moderates cortisol levels.”

Myers cites a double-blind crossover study published in *Phytomedicine* in 2000, in which 56 young and healthy physicians on night duty followed either a repeated low-dose rhodiola regimen or took a placebo for six weeks, testing their overall mental fatigue through parameters of “complex perceptive and cognitive cerebral functions, such as associative thinking, short-term memory, calculation and ability of concentration, and speed of audio-visual perception” (3). Tested before and after night duty, results showed statistically significant improvement in those taking the herb.

Another interesting study found that taking rhodiola affects the way someone perceives physical exertion. Eighteen subjects took either the herb or placebo an hour before an endurance exercise and researchers took physiological measurements and conducted questionnaires to assess the mood during the course of the exercise (4). Results showed that those taking rhodiola had a significantly lower heart rate during warmup, they completed a six-mile trial time on a bicycle ergometer significantly faster and their rating of perceived exertion was significantly lower. “Acute *R. rosea* ingestion decreases heart rate response to submaximal exercise and appears to improve endurance exercise performance by decreasing the perception of effort,” the researchers concluded.

Panax ginseng. Native to northeast China, Korea and Russia, panax ginseng is one of the most heavily cultivated and widely used herbs on the market (5). According to the Medicine Hunter, “Ginseng appears to act as a CNS [central nervous system] stimulant, promotes resistance to stress and fatigue, and helps to improve memory.

This means, to some extent it has similar effects as ashwagandha. The active constituents of panax ginseng are called ginsenosides, of which, Rg1, Rc, Rd, Rb1, Rb2, and Rb0 are considered most important. An in vitro study demonstrated that cells were better protected against oxidative stress as well as mitochondrial dysfunction when exposed to a pesticide called rotenone after being pre-treated with ginsenosides Rg1 and Rb1 (6). The ginsenosides were not particularly effective when used on the cells after they were exposed to rotenone, only when pre-treated, providing efficacy for the use of panax ginseng as a supplement as a proactive measure rather than reactive solution.

Another double-blind study compared the quality of life of 500 subjects using either a multivitamin with a ginseng extract and one without. Results showed that after taking one capsule a day for 12 weeks, the group that had been consuming the multivitamin with ginseng saw the most significant increase in a quality of life index with significant improvement on each of the 11 items on a standardized questionnaire (7).

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i.e. increased blood sugar and cholesterol levels, weight gain and elevated blood pressure.*

Schisandra. Also native to northeast China and parts of Russia, schisandra is a berry used solely for medicinal preparations in TCM, unlike other superfruits such as acai which people generally enjoy as a food (8). According to Medicine Hunter, "As an adaptogen, schisandra is a potent general tonic, decreasing fatigue, enhancing physical performance, and promoting endurance. The berry counters stress by reducing the levels of stress hormones in the blood. In human studies Schisandra berry and its extracts have improved performance among long distance runners, skiers and gymnasts.

One animal study published in Scientific Reports evaluated how a schisandra extract influenced chronic unpredictable mild stress-induced depression and cognitive impairment in mice (9). The researchers measured sucrose consumption in mice to indicate anhedonia, or the inability to feel pleasure. Mice exposed to stress had a significant reduction in their sucrose consumption, however mice who were treated long-term with schisandra had increased sucrose preference compared to untreated mice exposed to stress, suggesting an antidepressant-like effect. Exposure to stress also significantly increased immobility times in a forced swim test, another indicator of depression in mice. Treatment with schisandra also significantly decreased immobility times in stressed mice, complementing the results of sucrose preference tests.

With regard to cognitive impairment, maze tests were used. In a Y maze task (looks like it sounds; Y-shaped maze) mice typically prefer to explore a new arm of the maze or less recently explored arm (called spontaneous alteration). Stressed mice had significantly less spontaneous alteration compared to control and those stressed

mice treated with schisandra had significantly improved memory formation. The other maze task, the Morris water maze in which mice swim around a tank in search of a submerged platform, found that stressed mice took more time to find the platform in the last two training days out of five, indicating memory deficits induced by stress. Schisandra significantly ameliorated these effects on memory.

Holy Basil. Also known as tulsi or its scientific name *Ocimum sanctum*, holy basil is native to tropical Asia and a member of the mint family as well as closely related to sweet basil, typically used in cooking. "Tulsi (Holy Basil) is known for its cortisol-mitigating action in the body," says Amy Keller, director of education and training, Organic India USA, based in Boulder, CO, making it an ideal solution for fighting adrenal fatigue. "Balanced cortisol levels are associated with healthy energy levels and help the body to maintain restful sleep at appropriate times, while ensuring proper hormonal support during waking hours."

According to Medicine Hunter, the aromatic compounds of eugenol and caryophyllene may be responsible for the cortisol-balancing properties of the herb (10). "These compounds are present in many plants, including holy basil, and have long been used in essential oils because their fragrant scent is said to elevate both mood and spirit," the article states. "Scientific studies have shown that eugenol, in particular, helps to combat stress and enhance mental clarity. Research has also shown that the triterpenic acids isolated from holy basil effectively improve the body's response to stress."

Human studies appear to validate these claims. Majeed, for example, cites one controlled trial in particular which explored how supplementation with tulsi would affect individuals with generalized anxiety disorder (GAD) (11). Thirty-five subjects with an average age of 38 years in a hospital-based clinical setting were administered tulsi in a fixed-dose regimen of 500 mg twice daily, after a meal. Measuring psychological rating scale at baseline, 30 days and at 60 days, researchers observed that the herb significantly attenuated the subjects' GAD as well as its correlated stress and depression.

A different randomized, placebo-controlled trial studied tulsi's effect on managing general stress. In the trial, 158 subjects were given either a placebo or 1,200 mg of tulsi per day for six weeks (12). To qualify, subjects had to suffer from at least three of 14 stress symptoms that included: Quarrelsome behavior with later realization of mistake, frequent feeling of exhaustion or overwork, frequent sleep problems of recent origin and avoidance of even familiar people.

Subjects self-evaluated the severity of stress symptoms at baseline, two weeks, four weeks and six weeks with results showing that those taking the tulsi had significantly improved scores. Symptoms such as forgetfulness, sexual problems of recent origin, frequent feeling of exhaustion, and frequent sleep problems of recent origin decreased significantly. Total symptom scores were also much lower compared to placebo, with 39% overall improvement of general stress symptoms.

Eleuthero. Also known as wucha and Siberian ginseng, the herb grows throughout northeast Asia, including Russia, China, Korea and even Japan (13). Used historically in TCM, according to Medicine Hunter, "Scientists in

China as well as in Russia have found numerous active substances in wucha, including sterols, coumarins, flavonoids and polysaccharides. Some of the specific compounds in wucha that have been isolated for research include daucosterol, syringaresinol, isofraxidin, hyperine, sesamin, friedelin and syringin.”

While the mechanisms by which eleuthero acts as an adaptogen are not well known, research exists that demonstrates its efficacy. A monograph published in *Alternative Medicine Review* states, “Researchers found *Eleutherococcus* decreases adrenal hypertrophy and the subsequent depletion of adrenal vitamin C levels in stressed rats. Moreover, animals treated with an aqueous extract from the stem bark of this herb were able to increase their swimming time to exhaustion, confirming original research that mice exposed to *Eleutherococcus* have more stamina” (14).

In human studies, eleuthero was shown to ameliorate the effects of chronic stress and fatigue. One double-blind study involved 45 healthy volunteers randomly given two vials of eleuthero or placebo daily for 30 days. They were subjected to the Stroop Color-Word Test to assess stress response and had their heart rate and diastolic blood pressure monitored before and after treatment (14). Results showed that compared to placebo, the treatment group experienced a 40% reduction in their heart rate in response to the Stroop test and females taking eleuthero accounted for a 60% reduction in systolic blood pressure in response to the test compared to baseline.

Another randomized, double-blind, placebo-controlled trial studied the effects of eleuthero on patients diagnosed with idiopathic chronic fatigue. Ninety-six subjects were given either eleuthero or placebo for two months. Those with mild-to-moderate fatigue showed statistically significant improvement compared to placebo following completion of the treatment. The treatment group as a whole experienced significant improvement after one month but these results were not sustained for the remainder of the study (14). The researchers believe this is due to adaptogens being more effective when taken in a pulsed manner rather than continually used. Therefore it may be best to take adaptogenic herbs prior to periods when someone expects stress such as in the time leading up to and during a business trip or the holiday season.

Cordyceps. This adaptogen is a bit different because it is a fungus which attacks the larva of some species of insects, converting each larva to a sclerotium, from which the fruiting body grows (15). However, while some parasitized larva is still available, cordyceps are now mostly grown on soybeans, writes Winston (16). One animal study tested the antidepressant-like effects of cordyceps as it relates to fatigue. Researchers administered mice with either a hot water extract of cordyceps, a super critical fluid extract of cordyceps or just water for five consecutive days, and used immobility during a tail suspension test to measure the antidepressant activity of each group (17). Immobility means the mice have stopped trying to escape. Results showed that the mice administered the super critical fluid extract of cordyceps experienced a significant reduction in immobility time, compared to the hot water extract and water groups, indicating the extract may have an antidepressant-like effect by affecting the adrenergic and dopaminergic systems.

The Promise of Adaptogens

The adaptogens mentioned above are only a few of the many a person may benefit from, but these are among the most popular and likely to be found on a dietary supplement product label. Stress is certainly a problem for a majority of people and everyone is trying to figure out the best way to cope with it. It starts with developing healthy habits, dietary and behavioral, but we could all use some assistance. Adaptogens might be that assistance. While customers may not yet ask for adaptogens by name, this is a great opportunity to educate them about this class of herbs and help them in their pursuit of a more balanced and satisfying life. Give shoppers a hint with shelf talkers that say “Stress Relief” beneath adaptogenic herbs; it may inspire them to give it a try or ask you more questions.

Cruz puts it best when he says, “In the West, herbs and drugs alike are classified by their biological role in medicine — antibacterial, antidepressant, antifungal, etc., however, adaptogens represent a unique and often misunderstood category of PRO-adaptation, PRO-energy, PRO-recovery. If antibiotics are correctly translated as ‘anti-life’ (‘anti’ meaning against and ‘bios’ the Latin term for life), then adaptogens are its complete opposite.” That is not to say customers should disregard modern medicine, but should instead change their frame of mind about wellness. It’s not just about removing the negative but adopting the positive. **WF**