

A Review of the Clinical Trials and Evaluations of Prime One

The following is a retrospective analysis of Prime One and its active ingredients. This collective synopsis evaluates the clinical role Prime One adaptogens illicit on humans.

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I. INTRODUCTION

A) HISTORICAL PERSPECTIVES

The Russian scientist, Dr. Nicolai Lazarev, who coined the name "adaptogen", discovered Adaptogens in 1947. Dr. Lazarev was also the mentor of Dr. Israel I. Brekhman. Dr. Brekhman was a renowned scientist, researcher and medical doctor. He set out on a quest to discover what nutritional supplements would:

- 1) Help one resist the stresses of life and time.
- 2) Help release the wellsprings of stamina, energy and vitality.
- 3) Help in banishing fatigue and increase capacity for work and endurance.
- 4) Help in restoring body balance, mental and physical well-being.

Dr. N. Lazarev offered both a clue and direction for the quest. "Search for the answer in nature".

Dr. Brekhman has conducted extensive research for more than 45 years on adaptogenic herbs and is considered the "Father of Adaptogens". Professor Israel I. Brekhman, M.D., was a physiological pharmacologist, Dr. Brekhman holding 40 patents on the discovery of adaptogenic herbs and applications. His lifetime research culminated with the development of Prime One, Prime Plus and the High Performance Program.

B) DEFINITIONS OF ADAPTOGENS

Adaptogens are natural substances found only in a few rare plants and herbs. The plants and herbs provide special nutrients that help the body achieve optimal mental, physical and work performance.

The adaptogens have three distinguishing qualities:

- 1) They are completely non-toxic to the human body and would have no harmful or negative effects no matter what amount or how long they are used.
- 2) They catalyze responses in the body to increase the body's mental and physical performance as well as provide resistance to stressful insults at the cellular level.
- 3) Their effect is to balance and normalize the body's systems leading to overall homeostasis and health.

C) ISRAEL I. BREKHMEN, M.D., DISCOVERER OF SPECIAL FORMULATIONS OF ADAPTOGENS (1921-1994).

Dr. Brekhman worked at the Far East Science Center of the USSR in Vladivostok as Head of the Department of Physiology and Pharmacology of Adaptation. From 1956, he conducted research on potentially useful adaptogens to help improve human health and well-being.

Dr. Brekhman and his associates studied the effectiveness of the adaptogenic plants on the basis of daily and seasonal changes in individuals and under different environmental conditions. The scientific group studied 233 plants, their admixtures, and their biological actions. Dr. Brekhman devised four elaborate computer programs to (a) classify the plants and herbs as to biological and toxic actions, and (b) study the beneficial effects of the herbs.

Dr. Brekhman identified a nucleus of ten groups of formulations that had therapeutic and beneficial properties.

Dr. Brekhman and his group are the inventors and holders of 21 international patents relating to his work in developing natural plant substances. He has published 22 monographs, several hundred scientific articles and many books. The Soviet Union presented Dr. Brekhman with its highest award (The Order of Lenin) in recognition of his scientific work and achievements.

Dr. Brekhman's work and formulations were important and of immense help to the Russian space program and world-class Russian athletes.

The adaptogen formulations help:

- 1) Increase physical capacity and athletic performance
- 2) Restore the natural balance of the cosmonauts' physiology to cope with problems of motion, vertigo, weightlessness, enforced inactivity and difficulties in space flight.

"It has always been my dream to create a special formula to prepare people for life, to make them healthy, stable, happy and to protect them from stress. All my life, I have worked toward this goal, and now, finally, I have achieved a breakthrough. It is a complicated preparation of natural plant materials, which are the best, and the most effective, ingredients I have studied in all the years of my research. These ingredients work together in a combination that derive additional power from the mixture itself-a whole orchestra of ingredients creating the complex multi-sound symphony of this life-enhancing formula."
- *Dr. Israel I. Brekhman*

D) MECHANISM OF ADAPTOGENIC ACTION

The mechanism as to how adaptogens vitalize the body to achieve high mental and physical performance has been studied extensively in the former Soviet Union, Japan, Germany, Sweden and the United States.

When adaptogens are present, the adrenal gland hormone output is efficient and conserved in response to physical and environmental stress. The body response is efficient, and energy and hormone output is efficient and conserved. The adaptogens allow one to obtain extra stamina and energy. During physical activity, more glucose is released into the blood from body stores. The adaptogens help the glucose cross the barriers and enter the tissues more easily. Also, the elevated levels of glucose have been observed to return to normal more quickly in the presence of adaptogens. After taking adaptogens, there is more energy available to carry out difficult tasks, to perform better without fatigue. Thus, the body can achieve high mental and physical performance. In the former USSR, pilots, astronauts, athletes and workers in many other occupations have effectively put adaptogens to work.

The Soviet Olympic and elite athletes have routinely included adaptogens in their sports training programs to achieve maximum performance without unwanted side effects.

II. THE STORY OF "PRIME ONE"

A) PRIME ONE - BIOLOGICAL ACTIONS AND INGREDIENTS

Prime One, created by Dr. Brekhman, consists of seven Siberian "adaptogenic" herbs extracted from virgin Eastern Siberian forests and formulated as a liquid elixir to be taken daily. The primary herb is Eleutherococcus Senticosus (Siberian Ginseng).

Siberian Ginseng is known as the "King of Adaptogens" and well known for increasing endurance, stamina, and work capacity as well as increasing the ability for mental concentration. The Siberian Ginseng combats and reduces fatigue and exhaustion and heightens the body's resistance to various stressors, such as toxins, radiation, ultraviolet light, etc.

Prime One is a special combination of adaptogenic plants that produce increased mental and physical performance and health. The adaptogens also are stress protective and render stimulative, normalizing and antioxidant actions. The blend of herbs was found to be significantly more effective than any of the single herbs taken alone.

The formulation of Prime One was studied with numerous clinical studies and resulted in published research papers. Millions of dollars in Soviet-sponsored research was used for studies to validate the effectiveness of the biological responses and usefulness.

The studies of Brekhman and associates in humans and animals have demonstrated that the blend of "adaptogens" have effectively induced the following physiological responses and biological actions:

1. Uplift physical work capacity along with performance and endurance
2. Enhance mental work capacity
3. Heighten the body's nonspecific resistance to various stressors such as toxins, excess cooling, overheating, altered barometric pressure, ultraviolet, ionizing, and cosmic radiation and too much motor activity.
4. Offer beneficial effects in cardiovascular and respiratory system
5. Improve eyesight, color perception, hearing, and vestibular functions.
6. Promote longevity
7. Increase protein biosynthesis
8. Raise antibodies at immunization
9. Elevate the body's enzyme synthesis by means of general endocrine stimulation
10. Quench free radicals so as to prevent oxidizing pathology

The following is a summary of the findings of an independent study conducted by Merrill Research & Associates (MRA), a research company based in San Mateo, California.

In October of 1994, MRA conducted telephone interviews with more than 200 consumers who had used Prime One for one year or more.

The Independent Researcher's Key Finding:

1. "The effect of Prime One on long-term users appears to be extremely beneficial".
2. 97% had noticed a positive change or at least one benefit commonly associated with Prime One.
3. 90% had noticed improvements in at least five areas.
4. 68% reported a positive change in at least 10 areas.

Specific Findings:

- "Less tension or anxiety - 88%
- Better able to cope with stress - 87%
- More energy - 87%
- Improved relationship with spouse - 71%
- Improved relationship with children - 68%
- Lost weight while on Prime One - 57%"

A significant number of Prime One users reported improvements rather than declines in the following areas:

What effects that a person will feel after taking Prime One:

- Better sleep

- More energy
- Better focus and concentration
- Less compulsive eating
- Sick less often
- Less tension and anxiety
- Better job performance
- Less jet lag
- Better mood
- Better overall attitude
- More positive attitude
- More patience
- More productive
- Better control of temper
- Better organized
- Less procrastination

Prime One Ingredients:

1. Eleutherococcus Senticosus (Acantho Root)
2. Schizandra Chinensis (Chinese Magnolia Vine)
3. Rhaponticum Carthamoides (Maral Root)
4. Rhodiola Rosea (Golden Root)
5. Aralia Mandshurica (Manchurian Thorn Tree)
6. Glycyrrhiza Uralensis (Ural Licorice Root)
7. Rosa Majalis (Cinnamon Rose)
8. MA Complex - a combination of adaptogens and molasses. MA contains an energy enhancing syrup that is a byproduct of cane or beet sugar.
9. Food additives to ensure freshness - citric acid, potassium and sodium sorbate.

B) ADAPTOGEN HERBS IN PRIME ONE

1. ELEUTHEROCOCCUS SENTICOSUS (Acantho Root)

Dr. Brekhman's early research on Eleutherococcus extract convinced him that he had discovered a kind of portable gold and he named it the "King of Adaptogens". The ingredients of the widely used and ancient nutritional plant, according to the legends of the Far East, were "a tonic to the five viscera, allaying the soul, brightening the eye and opening the heart". Eleutherococcus works with the body to normalize body systems, reduce stress caused by physical and psychological overload, and increase endurance, stamina and work capacity.

DISTRIBUTION: In Russia: Primorye, Khabarovsk region, Amurian district. Southern Sakhalin, Korea, Japan, North Eastern China.

APPEARANCE: Bush with many stems, height 2-2.5m. The sprouts are straight with bark of a light-gray color. Thickset, directed with their thorns slantwise downward.

2. RHODIOLA ROSEA (GOLDEN ROOT)

Known as "Golden Root," Rhodiola Rosea is found in the Altai Mountains, among other areas of the world, where it has been known for more than 400 years. According to legend, one who finds the golden root "will be happy, healthy and live for two centuries." It contains a broad spectrum of nutritional elements, which work with the body to increase stamina for prolonged mental activity and enhanced endurance.

DISTRIBUTION: All Far East, Altai, Ural, Irkutsk region, Zabaikalye.

APPEARANCE: Perennial herbaceous plant, height reaching 50cm. Roots are thick, with a golden outside and pink inside color.

USABLE PARTS: Rhizome and roots.

3. ARALIA MANDSHURICA (MANCHURIAN THORN TREE)

The Manchurian Aralia is a short, handsome tree found in the Far East taiga, and an extract from its roots was thought to be a general strengthening tonic that promotes increased physical capacity and mental acuity.

These two plants, Rhodiola and Aralia, work in synergy with all the others; they touch all the body systems and softly adapt, coordinate and harmonize them to cope with the internal and external stresses of life.

DISTRIBUTION: Grows only in the Soviet Far East: Primorye, Priamurye, Southern Khabarovsk region. A close relative, *Aralia cordata*, is distributed in North Eastern China, Japan, Russia (Kuril Islands).

CULTIVATED: Japan, North America (California)

APPEARANCE: Not a tall tree (up to 6m). The root system is on the surface. The bark is wrinkled, with large thorns. The leaves are large (up to 1m), brought closer together at the end of the sprout, making the tree look like a palm tree. It blooms in the fifth year. The flowers are small, tassels; the fruits are spherical (3-5mm in diameter).

USABLE PARTS: Roots with rhizomes. The root system is located in the top layers of dirt. It is a strongly extensive rhizome with dependent roots. In well-developed bushes, the total length of the rhizomes with roots reaches 30m. The rhizome is cylindrical elastic, about 2cm in diameter. The leaves are on long (up to 10cm) petioles, palmatipartite; the leaves are elliptic with a wedge-shaped base. The flowers are small, on long pedunculus, gathered in spherical, flabby umbels. Usually the fruits are formed only on the upper, large umbel, fruit, 7-10mm in diameter, with 5 pits. It blooms in July-August; the fruits are ripe in September-October.

USABLE PARTS: Leaves, stems, roots.

4. SCHIZANDRA CHINENSIS (CHINESE MAGNOLIA VINE)

This ancient plant has been used for centuries throughout the Far East, China, Japan, and Russia and according to the ancient lore was a general tonic in times of fatigue and exhaustion. The complex nutritional makeup of this plant works with the body to increase physical productivity, attention and work capacity and to speed recuperation from fatigue.

DISTRIBUTION: Primorye, Southern Khabarovsk region, Amurian district, Southern Sakhalin Island, Northern China, Korea, Northern China, Japan.

APPEARANCE: Perennial woody liana, with strong branching stems which reach 10-15m in length and 1-2cm thickness. The leaves are alternate and stalked; the flowers are unisexual, yellowish in color. It blooms from the second half of May to the beginning of June. The fruits ripen in August-September.

USABLE PARTS: Seeds.

5. RHAPONTICUM CARTHAMOIDES (Wild) (Maral Root)

The first settlers in the Altai Mountains observed that in springtime spotted deer consumed *Rhaponticum*, also known as *Leuzea*, in great quantities, and in folk literature, it was thought to be a nutrient, which eases "fatigue and weakness". Its biologically active nutrients work with the body to improve circulation and mental acuity.

DISTRIBUTION: Southern Siberia, Eastern Kazakhstan, Altai Mountain and Western Siani.

APPEARANCE: Perennial herbaceous plant, height 50-100 cm. Rhizome is horizontal, brownish color, with many branches and hard roots. The leaves are alternate and large; the flowers are gathered in solitary apical heads, violet in color.

USABLE PARTS: Rhizome with roots of all kinds and forms that are 3-4 years old.

6. GLYCYRRHIZA URALENSIS (Ural Licorice Root)

The *Glycyrrhiza* root, an elementary food, is one of the most ancient plants and has been widely used in China, India,

Tibet and many other lands and, according to Tibetan lore, “nourishes and contributes to the performance of the six senses.” It works with the body to increase circulation, enhance skin tone and protect against stress.

DISTRIBUTION: Western Russia, North Caucasus, Zakavkazye, Western Siberia, Central Asia, Kazakhstan, Mediterranean, Iran, and Afghanistan.

CULTIVATED: Western and Southern Europe, Turkey, India, Pakistan, China, Japan, Southern U.S.

APPEARANCE: Perennial herbaceous plant with a powerful root system. Horizontal sprouts in length 1-2m, extend from the rhizome, 40-50 cm deep. The leaves are alternate and imparipinnate; the flowers are gathered in a raceme and are light-violet in color. It blooms from June-August.

USABLE PARTS: Root with rhizome.

7. ROSA MAJALIS (CINNAMON ROSE)

Extract of Rosa Majalis, a member of the rose family, was taken in ancient times to promote physical beauty and as a general revitalizing tonic. With extract of Glycyrrhiza, it promotes a balancing and normalizing effect on the body systems and provides antioxidant, multi-vitamin C activity.

DISTRIBUTION: In Russia: Primorye, Priamurye, Kamchatka, Sakhalin, Kuril Islands.

CULTIVATED: China

APPEARANCE: Bushes with thorns, the height is up to 2m. The leaves are alternate and imparipinnate. The flowers are large, aromatic. The fruit is complex, succulent, berry-like. The fruits are small nuts of an angular form. It blooms from May-July. It ripens in August-September.

USABLE PARTS: Fruits.

8. MA COMPLEX

This is a special blending of pure golden bioactive molasses with an adaptogenic plant material to form a new molecularly complex nutritional composition - Brekhman's MA complex. It creates an organic unity that operates in Prime One as a synergistic basis to enhance the activity of its other nutrients.

C) THE BREKHMANN STANDARDS OF QUALITY ASSURANCE

Out of his 45 years of research and experience, Dr. Brekhman defined standards for each plant used in the Brekhman formulas - standards that cover the time of year for harvesting, shipping and storage techniques and extraction techniques, temperature ranges during processing, and technology of the secret blending process of the formula.

Comprehensive Testing - Dr. Brekhman has defined stringent standards for quality and effectiveness. Each plant, after harvesting, must be pristine, unbroken, and free of all contaminants. Tests are run on the raw material as well as on the final blend of extracts, to determine if the complete spectrum of bioactive substances, including a full measure for stress protection, is present in the first stage and maintained and enhanced by the anticipated factor in the second stage.

The Conservant System - Small amounts of Citric Acid, Potassium Sorbate and Potassium benzoate are added to the final blend as a conservant to ensure that the formula will retain its freshness, full potency and uncompromised benefits during normal storage for two full years. Dr. Brekhman's comprehensive testing has shown that the conservant system used in the formula will not disrupt the flow of essential structural information or degrade the integrity of the bioactive ingredients of the product in any way.

Manufacturing Procedures - All Prime One products are manufactured and packaged in the United States to insure the highest standards of quality and purity. Only after all testing has been completed and all of Brekhman's standards are met does the seal of the Brekhman International Research Institute go on each bottle. Only then does it become Prime One.

III. SPECIAL BIOLOGICAL PROPERTIES OF ADAPTOGEN HERBS

A) ELEUTHEROCOCCUS SENTICOSUS (ACANTHO ROOT)

1. Increases physical capacity, endurance, and stamina
2. Increases attention span
3. Increases muscle tone and strength
4. Improves vision and sharpness of hearing
5. Sustains energy levels during prolonged work and exercise periods
6. Provides resistance to all levels of stress and strengthens the adrenal gland. Reduces stress caused by physical and psychological overloads, including changes in temperature, altitude, time zone, shift-work and environmental pollution
7. Enhancement of immune system increases activation of T-lymphocytes
8. It is an adaptogenic herb with anabolic characteristics and has many other beneficial biological properties

Siberian ginseng is a powerful tonic herb with an impressive range of health benefits. Unlike many herbs with a medicinal use, it is more useful for maintaining good health than treating ill health. Research has shown that it stimulates resistance to stress, so it is now widely used as a tonic in times of stress and pressure. In an alarming situation, the adrenal glands release corticosteroids and adrenaline that prepare the organism for the fight-or-flight reaction. When these hormones are depleted, the organism reaches an exhaustive phase. Eleutherococcus delays the exhaustive phase, and allows a more economical and efficient release of these hormones.

Siberian Ginseng has immunoprotective effects against breast (mammary gland) carcinoma, stomach carcinoma, oral cavity carcinoma, skin melanoma and ovarian carcinoma. It was found to have a pronounced effect on T-lymphocytes, predominantly of the helper/inducer type, but also on cytotoxic and natural killer cells.

B) SCHIZANDRA CHINENSIS (CHINESE MAGNOLIA VINE)

1. Increases physical and mental work capacity
2. Increases physical strength
3. Speeds recovery from fatigue or exhaustion
4. Improves night vision
5. Produces anti-oxidant activities against oxygen free radicals
6. Helps in carbohydrate metabolism under workload
7. Increases resistance to stress

C) RHAPONTICUM CARTHAMOIDES (MARAL ROOT)

1. Improves muscular performance, endurance, strength and coordination.
2. Shortens recovery period after physical, mental or sexual fatigue
3. Increases resistance to stress
4. Stimulates primary immune reactions and biosynthesis of proteins
5. Possesses anti-inflammatory properties
6. Has a unique bacterial cell binding activity with specificity for terminal n-acetyl-lactosamine residues

D) RHAPONTICUM CARTHAMOIDES (MARAL ROOT) - STUDIES ON MENTAL AND PHYSICAL PERFORMANCE IN ATHLETES

Studies conducted in seven clinics in Moscow, Kiev and Leningrad revealed that Rhaponticum Carthamoides extract significantly improves the physical and mental states of patients, enhances the general tonus, increases work capacity and increases body weight. Its anabolic properties caused a normalization of body weight. Moreover, Rhaponticum Carthamoides extract had a positive influence on the metabolic indicators of the cardiac muscle.

Rhaponticum Carthamoides extract has been extensively studied on athletes to better understand its important effect on physical performance. In experiments with 112 athletes, 89% of those receiving Rhaponticum Carthamoides extract show decreased fatigue, less apathy after physical work, and improved performance in sports, such as track and field athletics, swimming, speed skating and ski racing. The speed and strength qualities of the tested athletes were all significantly improved in comparison with the control group, which received a placebo. The study confirmed the effectiveness of Rhaponticum

Carthamoides extract on physical rehabilitative processes in that a more rapid normalization of lactic and uric acid occurred in the tested subjects.

After taking Rhaponticum Carthamoides extract, 69% of the subjects displayed accelerated adaptation to climactic and social conditions, 86% displayed an improved appetite, and 73% registered a significant increase in adaptation to intense physical workloads.

Additionally, a comparison experiment was conducted with commonly known anabolic steroids. The Rhaponticum Carthamoides' effect was comparable to that of steroid compounds, yet the former had no negative effects. The androgenic effects of anabolic steroids and their accompanying side effects were not revealed in the Rhaponticum Carthamoides extract.

Based on in-depth study, Russian scientists, researchers and trainers have recommended Rhaponticum Carthamoides in many areas of athletics for improving speed through strength abilities, as well as for enhancing the muscular functions. Since it actively influences the metabolic processes in the organs and tissues, the Rhaponticum Carthamoides extract is effective for preventing and eliminating the myocardial overload associated with physical exercise. This contributes to the rapid recovery process after physical work.

Many laboratory studies have shown the anabolic effects of Rhaponticum Carthamoides, including the capacity to increase body weight by improving the muscle-fat ratio, to increase hemoglobin and erythrocyte levels. This leads to greater fitness, endurance and performance.

One important study was conducted at the National Research Institute of Sports in Moscow, which is the primary organization providing sports research and development support to the Soviet and now Russian Olympic teams. A natural protein substance was used in combination with Rhaponticum Carthamoides extract. The protein preparation was known from previous in-depth studies to favorably influence the muscle-fat ratio as well as work capacity among athletes.

E) RHODIOLA ROSEA (GOLDEN ROOT)

1. Increases work ability
2. Improves physical and mental state
3. Improves quality of sleep and appetite
4. Shortens recovery time after prolonged work loads
5. Increases cardiovascular, respiratory and muscular strength
6. Aids in lowering lipids and triglycerides
7. Possesses anti-stress action

F) ARALIA MANDSHURICA (MANCHURIAN THORN TREE)

1. Increases stamina for prolonged and intense mental activity
2. Increases endurance for static and dynamic workloads
3. Increases physical work output with less use of energy
4. Improves memory and attention span
5. Increases resistance to painful stress
6. Improves hearing acuity

G) GLYCYRRHIZA URALENSIS (URAL LICORICE ROOT)

1. Aids digestive, respiratory, urinary and intestinal systems
2. Provides effective, restorative action on all internal membranes and tissues by a soothing and lubricating function
3. Neutralizes and modifies the taste of the other bitter herbs

H) ROSA MAJALIS (CINNAMON ROSE)

1. Has anti-oxidant, anti-inflammatory and anti-allergic activities
2. Enhances skin tone and color
3. Helps in external stress protection
4. Provides balancing and normalizing effect on all the body systems

I) MA COMPLEX

A combination of adaptogens and molasses obtained from the process of manufacturing of cane or beet sugar. Brekhman found molasses to possess a high level of adaptogenic properties.

J) FOOD ADDITIVES

The three natural additives of citric acid, potassium sorbate and sodium sorbate are added to Prime One to ensure full product potency of up to two full years. Citric acid and the potassium and sodium citrates are natural constituents of plants and animals that are normally metabolized in the human body.

IV. PRIME ONE STUDIES, USE AND SAFETY

A series of testing has been conducted on Prime One. The results of these studies and all of the extensive studies on Prime One ingredients confirm the complete safety of the product and its actions.

A) I. Several studies have been conducted on Prime One by Dr. Brekhman at the Far East Branch of the Russian Academy of Sciences (Vladivostok, Russia), demonstrating the following results:

Test Name	Date Completed	Results
Toxicity	May, 1992	Prime One is non-toxic and can be used as food supplement for various purposes.
Stress-protective	June 16, 1992	Prime One possesses a very high stress-protective action in a dose of 0.2 ml/kg, exceeding by 3-4 times the activity of Eleutherococcus, Rantarin, and Haurantin.
Stimulative	July 17, 1992	Prime One renders an expressed and stimulative action. In doses of 0.1, 0.15, and 0.22ml (2% concentrate) per 20g of weight. Prime One increases work capacity by 18%, 19% and 45% respectively. Its activity is two times higher than the activity of Eleutherococcus extract (root and leaves).
Anti-toxic	January, 1993	Prime One, in a dose of 0.2ml/100g of animal's weight, reliably increases their survival during acute intoxication caused by ethanol, giving evidence to its expressed anti-toxic action.
Anti-narcotic(anti-alcoholic)	January, 1993	Prime One shortens the duration of narcotic sleep by 10% in the studied dose (0.2ml per 100g of animal's weight), giving evidence to its mild anti-narcotic action.
Anti-oxidant	February, 1993	Prime One possesses high antioxidant activity in a dose of 0.3ml/kg of animal's weight, exceeding the Eleutherococcus root extract and the widely used synthetic antioxidant, eonol. Prime One significantly decreases the level of lipid peroxide oxidation in the liver under the influence of stress.
Immunomodulating	July 5, 1993	Under conditions of stress, Prime One has a stimulating influence on the formation of antibody-forming cells in mice spleen.
Gonadotrophic	June, 1993	Prime One possesses an expressed gonadotrophic activity. Prime One effectively contributes to an increase in the mass of seminal bubbles and the prostate gland. These qualities of Prime One allow for its recommendation as a remedy possessing a soft, correcting action on the sexual maturation in case of its delay.

Test Name	Date Completed	Results
Hepatoprotective	August, 1993	Prime One possesses an expressed hepatoprotective activity (dose 0.2ml/kg and 0.4ml/kg), activating the microsomal monooxygenase system of the liver cells (displayed by a decrease in the duration of hexane sleep), stabilizing the liver cell membranes and protecting them from the damaging influence of exogenous poison and activating the detoxicating function of the liver.
Embryotoxic	August, 1993	Prime One increases the mass of the fetus during the first stages of pregnancy. Prime One does not have a negative influence on the development of the implanted embryos (during pregnancy). Prime One does not possess a toxic action on the embryo.

II. Results of the study on Prime One conducted by Dr. Portugalov at the National Research Institute of Sports (Moscow, Russia).

30 qualified middle distance runners (17-26 years old) and 10 recreational runners (45-52 years old), systematically involved in running (no less than two training sessions per week, 8-12 km), participated in the study. A double-blind method was employed in order to rule out the possibility of placebo effect. Prime One increased work capacity (work performed in the test per 1kg of body weight) in comparison with the control group. Prime One rendered a stress-protective action. No side effects were found during medical observation of the test subjects nor in the data from their questionnaires. A significant percentage of the interviewed people noted that the use of the adaptogenic products caused an improvement of subjective indicators such as sleep, desire for training (despite increased workloads) and improvement in their physical and mental state.

B) DIRECTIONS AND PRINCIPLES FOR USE OF PRIME ONE

1. DIRECTIONS FOR USE

Prime One is a natural plant-herb food formula to be used every day as a supplement to a healthy diet. Prime One helps the body balance itself.

Suggested daily serving sizes: Age 12-65: 2 tablespoons (30ml) or 1 cap full. Children ages 5-11 and adults 66-75: 1 tablespoon (15ml). Children age 1-4 and adults 75 and over: 1 or 2 teaspoons (5 or 10ml).

2. PRINCIPLES FOR USE

PRINCIPLE #1: You should find your own ideal serving:

We all differ in age, weight, genetic makeup, state of health and daily stress level. Precisely because adaptogens do work, it is worth the effort to find the amount that works best for you. Most people do best with the suggested serving size; some take less, and some take more. With adaptogens, more is not necessarily better, but is entirely safe. Prime One is completely non-toxic, and too much will not hurt you. So if you take too much, you would probably just feel tired. If you do experience fatigue, just take less next time.

You may want to adjust the time of day you take Prime One. Most people take it in the morning, but some people prefer the afternoon. Some take half in the morning and half in the afternoon, and a few even take Prime One at bedtime. Finding your ideal serving size and time of day may take awhile, so be patient. Adjust and experiment...and most importantly, listen to your body.

PRINCIPLE #2: You may want to vary your serving size during stressful times.

This would depend on changes in your daily stress level, health challenges or lifestyle changes. If you think you need more or less, try it. Again, listen to your own body at these particular times to find what feels right for you.

PRINCIPLE #3: If you experience any adjustment reactions during the first few days, take less, but don't stop.

Prime One helps the body balance itself. This is a healing process, and everybody responds differently. Some people may be highly responsive to adaptogens, especially at first. They may experience some signs of adjustment, such as fatigue, headache or GI upset. This can be a normal part of the balancing process. Adaptogens allow the body to release impurities. So any mild effects, such as diarrhea can be evidence that Prime One is taking hold and starting the normalizing process. If this happens, take less, but do not stop. Cut back to one teaspoon a day for a while, and drink plenty of water. As your body adjusts, you can gradually increase your serving portion.

Listen to your body to find what works for you. Prime One was designed as a product for all people of all ages. Depending on your body, your circumstances, and how your body adapts, the range of serving size can vary from one teaspoon to two tablespoons daily.

C) BENEFITS FROM PRIME ONE

1. LONG-TERM BENEFITS

You will live a healthier, more productive life.

This applies no matter what condition you are in right now - no matter what else you do for your health. 3,000 clinical studies prove that the ingredients in Prime One have unique benefits that you just cannot get from any other nutritional source. Prime One protects the body from stress - the primary source of aging, deterioration and disease.

2. IMMEDIATE BENEFITS

Your body begins to mobilize its defenses against stress.

From the very first day on Prime One:

- T-cell levels increase.
- The body produces less adrenaline and gastric acids.
- Cells improve their overall function and are no longer starved of essential nutrients.

These benefits are immediate, but internal, and you may not be aware of any changes during the first few days or weeks. These changes occur inside the body, and their benefits are essential for enjoying the healthiest life possible.

3. BENEFITS YOU WILL FEEL

Your body will perform closer to its optimum level.

Prime One is not a vitamin. It is not a medicine that cures any particular illness or condition. It effectively assists the body in using its own resources to achieve optimum levels of physical, mental and emotional health.

Most people are not aware of any obvious changes during the first few days or weeks. Over time, however, you may begin to notice important long-term improvements, resulting from your body's internal balancing.

D) COMMONLY ASKED QUESTIONS ABOUT PRIME ONE

Will Prime One be just as effective if I divide the recommended serving?

Yes. Although most people take their recommended serving first thing every morning, some prefer to divide their serving. Listen to your own body. Each of us is different, leading different lifestyles with different needs. If you feel you need more energy in the evening, for work, exercise or other activities, try dividing your serving. Experiment with your serving size and the time of day you are taking Prime One to find the method that works best for you.

What makes Prime One different from other supplements, herbs and vitamins?

Prime One is different in two specific ways. First, adaptogens are completely unique in nature. They are the only natural substances, which can help the body protect itself from stress and provide benefits, which are impossible to get in any other way. Secondly, Prime One is a complex combination of adaptogens. From the collection and transportation of the herbs, to the formulation and manufacturing of the product, the process of creating Prime One is not duplicable. No other product or substance on the market possesses this technology, developed over 45 years by Dr. Brekhman and his team of top researchers.

Should I use Prime One even if I am in good shape and believe I have a low stress level?

Yes, absolutely. Everyone has stress, even small children. There is no limit to well-being, and the cumulative benefits of Prime One, which may manifest in ways that you cannot see or feel. When your immune system is stronger, you are able to resist many potentially damaging conditions. No matter how productive or energetic you might be, you can attain a higher level of physical and mental capability on Prime One.

E) SAFETY AND PROLONGED USE OF ADAPTOGENS

How safe are adaptogens? Science has confirmed that they are absolutely safe. Since Eleutherococcus Senticosus is the primary ingredient of Prime One, it is advisable to look into its attributes in detail. In various tests, the extract of Eleutherococcus

was administered during a period ranging from several days to the entire lifespan of laboratory animals (mice, rats, rabbits, guinea pigs) and from animals (hens, ducks, turkeys, Japanese quails, minks, piglets and pigs, cows, horses, deer, etc). In all instances, the extract invariably exerted a beneficial effect only and no side-effects or toxic manifestations were observed. Animals given Eleutherococcus for many months in large doses looked very healthy. Their appetite was good. Eleutherococcus was administered from birth to death without any ill effects. There are no known major side-effects.

Eleutherococcus extract (Siberian Ginseng) has been used in the USSR for 30 years. The Soviet Union has been exporting the extract of Eleutherococcus for the past 20 years to the US, West Germany, Japan, Austria, Australia, France and many other countries. It is important to note that no cases of toxic effects have been recorded.

Eleutherococcus extract poisoning, even mild forms, is totally excluded. In numerous cases during wide consumer applications, some participants reported that Eleutherococcus extract self-administered orally well beyond the recommended dosage in the amount of one or even two glasses (1ml of the extract contains the sum total of extractives in 1g of the root) caused no detrimental effects. It is further known that long-term (10 years minimum) therapeutic dosages of Eleutherococcus extract, for example by diabetes mellitus patients, were likewise not accompanied by side-effects.

Numerous studies on the prolonged usage of Prime One ingredients indicate that not only are there no detrimental effects, but that adaptogens provide an even more favorable effect when administered over a long period. There are good grounds for contending that prolonged (comparable with the lifespan) administration of Eleutherococcus is capable of extending the active period of a man's life. For example, one study (Brekhman, On the Antitoxic Action of Eleutherococcus, Moscow, 1982) was conducted on mongrel white rats (male), in which half of the test animals were subjected from the age of nine months onwards to various stressors applied alternately every other day for a period of 250 days. The other half of the rats were used as controls (no stressing). Immediately after stress effects discontinuations, i.e. when the age of the rats exceeded their half lifetime, each group was divided into two subgroups: the first group consisted of controls, while the second and third groups received Eleutherococcus extract daily in a dose of 0.5ml/100g body weight with drinking water over a period of 320 days.

The Eleutherococcus extract increased the lifetime of rats in terms of both the half survival time and the average longevity. The administration of Eleutherococcus also resulted in improving a variety of physiological and biochemical characteristics of the health of test rats. Similar findings have been reported in studies on humans.

In one study at the Volzhsky Automobile Factory, 13,000-15,000 workers received Eleutherococcus extract over a period of 10 years, resulting in a 30-50% decrease in cases of flu and a 20-30% reduction in lost work time due to absence or disability. In another study on miners from Vortuka who received Eleutherococcus extract over a period of eight years on a regular basis, the total number of cases of common cold was 23.5% lower than that for the miners of Inta, and there was a decrease in lost work time of 90%. No side effects were reported in either of these trials.

Hence, experimental data and experience gained in the course of prolonged use of Eleutherococcus by human beings point to the absence of toxic action of Eleutherococcus extract, as well as to the safety of the long-term use or overdose of this extract.

F) SAFETY AND PROLONGED USE OF PRIME ONE

The most lengthy and involved research into Prime One ingredients has been conducted by scientists in the former USSR under the auspices of that country's Academy of Sciences. This work included analysis of the long-term effects of adaptogens during application among athletes, astronauts, industrial workers and other professional groups. In addition to the universal findings that adaptogens improve mental and physical work capacity and increase the resistance of the host to stress and harmful environmental factors, all of the studies concluded that the substances are non-toxic and entirely safe for prolonged use. The safety of Prime One for extended use is understood in the context of the theoretical foundations underlying the dynamics of stress and the action of adaptogens. For a long time, the stress reaction was the only known general non-specific reaction. However, based on many years of study, it has been shown that there are other general non-specific adaptive reactions along with stress that develop in response to influences of varying degrees and quality.

In addition to the commonly known stress reaction, there are two other types of adaptive reactions; (1) the training reaction and (2) the activation reaction, which also play a vital role in the adaptive processes of the organism. While stress is the reaction to extreme or prolonged irritants from the external or internal environment, the training reaction is the adaptive response to low-level irritants, and can, over time, help the body train itself to overcome such irritants. The other adaptive reaction, known as the activation reaction, is the common response to medium-level irritants. During the activation reaction, moderate excitation predominates in the central nervous system, which determines its influence on work capacity, coordination of

movement, speed of motor reaction, decision-making, etc.

Research shows that adaptogens have the capacity to facilitate and maintain both the training and the activation reactions, especially in small doses. The daily and prolonged use of adaptogens will help the organism maintain the activation reaction, and therefore, to attain a higher level of resistance, forming the basis for the normal and healthy state of the organism.

In addition to the studies on the non-toxicity and general safety of Eleutherococcus under prolonged use, similar findings have been reported for all of the ingredients of Prime One. The capacity of these ingredients to regulate physiological functions automatically, depending on requirements, is a singular property of Prime One. This ability explains a wide range of non-specific action of Prime One, as well as the normalizing action and also demonstrates its safety.

G) TOXICITY STUDIES ON PRIME ONE PRODUCTS

The studies were conducted June 2001, by the:

Immune Institute, Inc.
Daryl See, M.D., Director
18800 Delaware Street, Suite 900
Huntington Beach, CA 92648

Assay Methods for Toxicity Evaluation

- 1) Trypan blue toxicity assay for peripheral blood mononuclear cells (PBMC)
- 2) Trypan blue toxicity assay to murine hepatocytes
- 3) Natural killer (NK) lymphocyte function by 51CR (chain reaction) release assay
- 4) Cytochrome p450 activity by competitive inhibition
- 5) Glutathione assay by spectrophotometry
- 6) Anti-viral assay by semi-quantitative PCR (polymerase chain reaction) assay to EBV (Epstein-Barr Virus)

Results:

- 1) Prime One showed evidence of toxicity to marine hepatocytes only at very high concentrations. However, no toxicity to murine hepatocytes was seen at concentrations up to 10 times the recommended amount to be taken daily.
- 2) Prime One showed no toxic effects on cytochrome p450 isoforms (2A and 4A). Cytochrome p450 2A and 4A are involved in the most common drug metabolic pathways.
- 3) Prime One exhibited moderate NK (natural killer lymphocyte cell) function increases at physiologic concentrations.
- 4) Prime One demonstrated pronounced anti-viral activity against the EBV (Epstein-Barr Virus).
- 5) Glutathione: a potent inducer of anti-toxicity enzymes; most important intracellular anti-oxidant and immune system modulator. At physiologic doses, Prime One was a potent inducer of glutathione.

Conclusions:

- 1) Prime One was safe in the above in vitro testing studies at up to 10 times expected physiologic concentrations.
- 2) No interference of Prime One was noted with cytochrome p450, which is a liver enzyme involved in the metabolism and excretion of organic drugs (xenobiotics).
- 3) This study provides some assurance that adverse drug interactions may not be seen in vivo.

V. PRIME ONE CONCENTRATE AND PRIME PLUS

A) PRIME ONE CONCENTRATE

The formula includes the same adaptogenic herbs that are in Prime One, but their concentrations are higher. Prime One Concentrate was formerly called Brekhman's Gold.

If an individual is using Prime One and wants to boost the benefits of Prime One, then he/she can use Prime One in alternating cycles of Prime One Concentrate to gain a high, energy boost and increase the long-term benefits.

The alternating combination of Prime One and Prime One Concentrate is very effective. In the first month, Prime One Concentrate is recommended. In the second month, Prime One is recommended. The longest interval is two months.

For Prime One Concentrate, one will take 10 to 30 drops, one to three times per day during the cycle. The lifestyle activity, physical and mental performance and stress level will help determine the proper serving for the individual.

PRIME ONE CONCENTRATE

Age Daily Dosage

Normal Dosage	10 to 30 drops
2-6 years.....	5 drops
7-10 years	5 to 10 drops
11-14 years.....	10 to 15 drops
Elderly	Start with 10 drops and build up to normal dose

How to decide whether to supplement cycles of Prime One Concentrate with regular use of Prime One

- Use Prime One Concentrate in alternating cycles with Prime One if you want the highest sustained tonic benefit that nature can provide with good, overall adaptogenic benefit.
- Use Prime One alone if you are generally happy with your energy level, overall body balance and want the highest immune system resistance.
- Use Prime One Concentrate for that extra boost.
- Prime One Concentrate emphasizes sustained daily energy.
- Prime One Concentrate can be dropped onto your tongue or put into your favorite beverage.
- The perfect complement to Prime One.

B) COMMONLY ASKED QUESTIONS ABOUT PRIME ONE CONCENTRATE

How does Prime One Concentrate affect the immune system?

Prime One Concentrate greatly enhances activity of the immune system. If you stop using Prime One Concentrate and do not resume using Prime One, gradually your immunological responses will decline.

Can Prime One Concentrate be taken in smaller dosages on a daily basis for a long time?

Prime One was created for everyday use for long term, general whole body protection. The uniqueness of Prime One is its ability to help the body build up the capacity of adaptation, which is used to overcome stress by enhancing general resistance of the body. Prime One Concentrate offers all the body's systems short-term support to function more efficiently. It's for people who need extra energy and need it today.

Why is there alcohol in Prime One Concentrate?

Traditionally, from ancient times, the alcohol-based extraction of biological active substances from herbs and plants has proven to be very effective. All original adaptogenic products developed by Dr. Brekhman are alcohol-based/extracted. The second reason for using alcohol is to maintain the quality of the adaptogenic extract as a natural preservative. Using 10-30 drops of Prime One Concentrate extract (0.35-1.0ml) is absolutely safe for children. For persons with intolerance to micro-dosages of alcohol, such as recovering alcoholics, we recommend that you consult with your doctor before using Prime One Concentrate.

I have been mixing Prime One Concentrate extract with a small glass of juice because the taste is too strong. Will doing this diminish the benefits of this product?

Mixing Prime One Concentrate with any other liquid, even hot beverages will not undermine the potency of this product.

What is in Prime One Concentrate? What are the actual ingredients?

The Prime One Concentrate Formula includes the same adaptogenic herbs that are in Prime One, but their concentration is higher. These concentrations make this product act with a pronounced general tonic resulting in: higher level of alertness, better concentration, and more available energy for mental and physical performance.

Could I start my nutritional program with Prime One Concentrate instead of Prime One?

By starting with Prime One Concentrate, you will more quickly appreciate the unique benefits of adaptogenic herbs, especially if you are experiencing a great deal of fatigue. However, after one month of using Prime One Concentrate, we recommend that you switch to Prime One. Only Prime One will help to enhance your body's long-term resistance to all kinds of stresses.

How does Prime One and Prime One Concentrate work at the cellular level?

Health is dependent on the proper functioning of the cells. Stress has an impact at the cellular level, depriving cells of their energy supply. When a cell cannot function properly, it becomes weak and damaged. The body gradually breaks down as disease and the aging process begins. Prime One and Prime One Concentrate, from the beginning, allow the cells to absorb and use their available energy by uniting glucose and enzymes. Adaptogens also prevent the formation of complex molecules that obstruct the cells from manufacturing energy efficiently. The body is allowed full access to its energy potential and the cells return to healthier functioning as the various body organs and systems begin to normalize.

C) PRIME PLUS

Prime Plus is a natural food supplement for improving performance and speeding up rehabilitation, enhanced by the synergistic action between three powerful adaptogenic nutrients.

PRIME PLUS CONTAINS THE FOLLOWING INGREDIENTS

- *Rhaponticum Carthamoides (Ecdisten)*
- *Citrus Bioflavonoid Complex*
- *Cruciferous Vegetable Vitamin Mix*
- *Ascorbic Acid*
- *Ascorbyl Palmitate*
- *Calcium Ascorbate*
- *Magnesium Ascorbate*
- *dl-Alpha Tocopherol acetate (Vitamin E)*
- *α-Tocopherol succinate*
- *Adaptogenic Golden Molasses*

Prime One and Prime Plus contain no substances that are banned by the International Olympic Committee (IOC). Athletes from all over the world utilized these products with great success at the 1996 Summer Games in Atlanta, Georgia.

RHAPONTICUM CARTHAMOIDES (MARAL ROOT)

Appears in Prime Plus as a highly refined extract called "Ecdisten". Ecdisten has a remarkable ability to increase protein synthesis thereby increasing work capacity, endurance, speed and strength. The results of using Prime Plus are clearly demonstrated through improved muscular performance, strength and coordination. One of the greatest benefits is reduced recovery time after training and sport performance.

Clinical trials have shown that the use of Ecdisten has further benefits, including improved circulation and mental acuity, increased resistance to stress, and increased expulsion of bile and anti-inflammatory characteristics. Ecdisten, by enriching the oxygen-carrying capacity of the red blood cells, has benefits that are generally quickly realized by the user.

The combination of Prime One and Prime Plus provides synergistic and complementary benefits that are unique to Prime One. The combination will provide:

1. More energy, stamina, and endurance in high output work and athletic performance
2. Greater vitality and youthfulness
3. Faster recovery after workouts
4. Higher resistance capacity for stressful situations

D) RECOMMENDED USAGE OF PRIME PLUS

Start by using Prime Plus for 10-20 days. By starting with Prime Plus, you will begin to appreciate the unique benefits of the natural performance enhancers more quickly.

Determine your serving size of Prime Plus based on two factors: Your body weight and the challenges (stresses) in your life. Then, use the Prime Plus usage chart. Note: Servings should be divided into equal portions and taken two or three times per day (10-15 minutes before meals).

Follow the Prime Plus usage cycle (10-20 days) with a 7-30 day rest interval. The length of the cycle and rest interval depends on your lifestyle, as well as the challenges in your life. Use Prime Plus when you really need to support your body for a higher level of productivity and better performance. The most favorable time for Prime Plus (for athletes) is when your training program is intense and before competitions.

After you stop your first cycle of Prime Plus, continue taking Prime One.

Determine your standard serving size for Prime One according to the instructions on the bottle. Take Prime One once a day or two equal portions daily.

If you are taking Prime One for the first time, use half the standard serving size for the first two to three days. This allows your body to adjust to the new nutrients. After taking Prime One for three days, increase your servings to the full, recommended usage.

Continue to take Prime One every day during both the usage cycles and rest intervals of Prime Plus.

PRINCIPLES FOR USE OF PRIME PLUS

Fifteen days is the average cycle length that provides optimum benefits for most people. Cycles may be as short as 10 days or as long as 20 days. Your rest interval should be from seven to 30 days. If, after using Prime Plus for four days, you do not experience an increase in energy, vitality and performance, gradually increase your usage by one to two capsules a day.

PRIME PLUS USAGE CHART

Consider your activity level and match it to either Level A or Level B. Then, use the chart to figure your optimum serving size for Prime Plus. Find your weight in pounds. Then, based on your activity level (A or B), find the number of Prime Plus capsules to take every day. Servings should be divided into equal portions and taken two or three times per day (10-15 minutes before meals).

Level A...For times of high stress and any activity level up to recreational exercise for health and well-being.

EXAMPLES:

- Walking 20-30 minutes per day
- During your menstrual cycle
- Lap swimming or jogging 20 minutes, 2-3 times per week
- High pressure project at home or work

Level B...Participation in a consistent, intensive exercise program with high personal performance or improvement objectives.

EXAMPLES:

- High-school level (or its equivalent) for the following sports: football, basketball, baseball, tennis, track and field or swimming.
- Intense aerobic exercise (long distance running, swimming, biking) 4-5 times per week, 45 minutes or more each session.
- Weight lifting 4 or more times per week, each session not less than one hour.

Weight In Pounds	Level A	Level B
	# Capsules Per Day	
<120	3-4	4-5
121-150	4-6	5-7
151-180	6-8	7-9
181-200	8-9	9-10
>201	9-10	10-12

E) COMMONLY ASKED QUESTIONS ABOUT PRIME PLUS

Is more better?

No, not necessarily. If you are a casual participant in recreational activities, you will not get the most from the program by using the same amount of Prime Plus as an Olympic athlete. Follow the chart in this flyer. Listen to your body and adjust your usage up or down based on your experience.

What if I am using Prime Plus with a weight loss program?

If you are not exercising, use one capsule three times per day. If you're exercising, refer to Level B.

What if I am using Prime Plus with a weight-gain program (building lean muscle tissue)?

Best results will be achieved by using Prime Plus in conjunction with weight and resistance training and following the serving suggestions in Level B.

What if I am an elite or competitive athlete?

You may use one to two more capsules a day than indicated in Level B. Listen to your body.

Why is a "cycle" of Prime Plus recommended to be 10-20 days long?

Clinical trials have demonstrated that best results are achieved by 10-20 days on Prime Plus with intervals of 7-30 days between uses. 10-20 days represent an "average" use cycle of Prime Plus with rest intervals between cycles.

How do I adjust my usage for cycles more or less than 10-20 days?

If you find that a cycle longer or shorter than 10-20 days works best for you, simply increase or decrease the number of days in your cycle.

How can I tell if I am using the right amount of Prime Plus?

When people are taking just the right amount of Prime Plus for their body, they report feeling increased alertness, increased energy, greater capacity, and more vitality and youthfulness. Again, listen to your own body, and adjust your usage of Prime Plus up or down until you determine just the right amount.

VI. RESEARCH BEHIND THE BENEFITS OF PRIME ONE AND ADAPTOGEN SUMMARY OF RESEARCH OF THE ADAPTOGENS

A) THE IMMUNE SYSTEM (PRIME ONE)

Studies show that the adaptogenic extracts included in the unique formula of Prime One render vital support to the immune system. For example, in one study of healthy volunteers, a general enhancement of the activation state of T-lymphocytes was observed after administering Eleutherococcus. T-lymphocyte cells are also called "killer cells," because they attack and destroy various viruses. Another study revealed that Eleutherococcus extract augments the phagocytic activity of the peripheral blood leukocytes and favors the reduction of pathological flora on the surface of the skin, indicating an increase in the body's non-specific resistance. The effect of adaptogens, manifested by their ability to induce the formation of endogenous interferon (intracellular development of basic anti-viral proteins), reveals essential aspects of their control over the immune and non-specific mechanisms, which protect the body from viruses. Adaptogens exert a strong immunomodulatory influence in healthy test subjects and can be considered non-specific immunostimulants.

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B) PHYSICAL WORK CAPACITY (PRIME ONE AND PRIME PLUS)

Research institutions have discovered that adaptogens are vital for enhancing a person's capacity for physical workloads. Adaptogens have been widely used in studies with workers in professions involving intense physical work strain. They significantly improve bodily functions, by enhancing the body's ability to perform physical tasks and to recover after strenuous physical activity. In tests on 655 healthy men, (all of whom were employed as flight personnel, pilots, navigators, radio operators), Eleutherococcus, Aralia and Schizandra accelerated recovery processes following tiresome flight schedules. The subjects' physiological state improved significantly within three hours of a flight to levels even higher than prior to the flight.

In one long-range study involving 60,000 people conducted over a 10-year period at the Volzksky Automobile Factory in Tolyatti, Russia, absence and disability were reduced by 20-80% after taking Eleutherococcus. A 30-50% decrease in cases of influenza and a general improvement in health were also noted.

Researchers

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C) **MENTAL WORK CAPACITY (PRIME ONE)**

Along with the research, which proved adaptogens' value for improving physical work, research studies involving various tests of mental acuity have demonstrated that adaptogens also have the ability to increase a person's mental work capacity. That is, they increase both the amount of mental exercise a person can carry out, as well as the quality of that work.

For example, *Schizandra Chinensis* and *Rhaponticum Carthamoides* exerted a strong stimulative influence among test subjects who displayed a great improvement in reading comprehension, aptitude and speed.

Rhodiola Rosea and *Aralia Mandshurica* enhance a person's ability for memorization and prolonged concentration. In proof-reading tests, after taking Rhodiola extract, a decrease in the quantity of mistakes was observed in 88% of the experimental group, while an increase in the quantity of mistakes was observed in 54% of the control group.

Eleutherococcus Senticosus, the "King" of the adaptogens, has been shown to increase mental capacity by improving reflex action, attention span and the precision of performed work. Improvement in hearing, eyesight and motor coordination was also an additional benefit noted in these studies.

Researchers

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D) PERFORMANCE, ENDURANCE AND REHABILITATION (PRIME ONE AND PRIME PLUS)

Adaptogens provide the basis through which people can build up an energy reserve to be tapped when the body needs it most under extreme physical tension and during recovery from fatigue. Test subjects administered adaptogenic extracts rapidly displayed improved indicators of energy and endurance, and athletes were able to greatly improve the results of their athletic endeavors.

In one study, under exhaustive muscle workloads, it was revealed that Rhodiola extract increased the activity of proteolytic enzymes and also significantly increased the level of protein and RNA in the skeletal muscles.

In another study involving a college baseball team, it was revealed that all four parameters of work capacity (including VO₂ max, O₂ pulse max, total work and exhaustion time) showed significantly larger increases when Eleutherococcus was administered than when the subjects were given a placebo. After administering Schizandra in an experiment on 140 athletes, 74% of the test subjects obtained their best results in a 3,000 meter run.

Observations were also conducted on weightlifters, wrestlers and gymnasts. Based on the data obtained, it was concluded that Eleutherococcus extract increased physical work capacity, decreased fatigue and improved the general mental and physical state of the test subjects.

In an experiment on healthy male athletes, adaptogen administration induced a 64% increase in work endurance, while a higher rate of cases with reduced blood lactate and consistently lower blood pressure were also recorded.

A study of people performing physical labor revealed that when Eleutherococcus, Rhaponticum Carthamoides and Rhodiola were administered, all test subjects showed an improvement in their general physical and mental states. There was also an improvement in functional indicators (pulse, arterial pressure, vital capacity, back muscle strength, hand endurance under static tension, coordination of movement) and a reduction in the duration of the recovery period in all test subjects.

Through extensive experiments on swimmers, skiers and other athletes, scientists around the world have reliably demonstrated the value of adaptogens for increasing stamina and accelerating the recovery processes after physical exertion.

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E) STRESS PROTECTIVE ACTION (PRIME ONE)

Stress is a phenomenon that manifests itself in our bodies in many different ways. Some of the more common symptoms of stress include problems with sleep, depression, anxiety, irritability and lethargy. Along with the physical symptoms, the body also has more fundamental, biological responses to stress. At the cellular level, stress affects our ability to properly transform glucose into energy. Beta-lipid-proteins build up and inhibit the passage of energy through the cell walls. This reduced energy level not only affects our ability to perform physical functions, but also inhibits the proper function of all the body's organs, including the brain.

Perhaps the single most important property of adaptogenic plants is their proven ability to combat stress in all forms. Eleutherococcus, the strongest of the adaptogenic plants, increases the body's resistance to a variety of stressors. Experiments have conclusively demonstrated that Eleutherococcus changes the course of the primary physiological indicators of stress by reducing the activation of the adrenal cortex.

Rhodiola Rosea leads to an increase in the amount of basic b-endorphin in the blood plasma, which inhibits the hormonal changes indicative of stress.

Research by the following scientists shows that adaptogens, which are an integral part of the Advantage Marketing Systems product formulation, allow the body to more ably cope with stress, whether it is daily, extreme, acute, or chronic.

Researchers

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F) NORMALIZING EFFECT (PRIME ONE)

The adaptogenic ingredients in Prime One have an important normalizing effect on all bodily functions. In studies of an ice-breaker's crew on an extended Arctic voyage after four months of sailing, Rhaponticum extract had a normalizing effect on the central nervous and cardiovascular systems, leading to improved sleep, appetite, mood, general mental and physical state and general enhancement of the functional ability of humans under working conditions.

In experiments simulating the effects of extreme changes in altitude on mountain rescue workers, the normalizing action of adaptogens on metabolic disorders occurring under such conditions was revealed. According to the data, adaptogens also contribute to the normalization of protein, vitamin and water-salt metabolism. Extremes in bodily function like high cholesterol, low hemoglobin levels, irregular sugar contents and abnormal blood pressure may be normalized with the support of adaptogens, which activate and regulate normal and efficient blood circulation. At the same time, the use of adaptogens in no way disrupts the function of these bodily systems.

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G) RESISTANCE TO ENVIRONMENTAL TOXINS, CHEMICALS, RADIATION & INFECTIONS (PRIME ONE)

Adaptogens increase the body's resistance to the harmful influence of various physical factors, such as cooling, over-heating, enhanced motor activity, increased or decreased barometric pressure and ultraviolet on ionizing radiation. Adaptogens have also been shown to increase the body's resistance to the harmful influence of both chemical and biological natures (various toxins, narcotics, hormones, foreign serums, bacteria, etc).

Many facts concerning this kind of universal defense action have been obtained for adaptogens. In observations on sailors in the tropics, it was revealed that in 70-75% of the test subjects, Eleutherococcus decreased the manifestation of unfavorable change in the central nervous system, thermoregulation and hemodynamics (changes associated with the process of adaptation to an environment for which the human body is unaccustomed). Eleutherococcus also contributed to an increase in physical and mental work capacity, alleviation of tension in the function of the adrenal glands and improvement in the functional state of the cardiovascular and respiratory systems.

In another study on female vegetable farmers, the body's resistance to harmful environmental factors increased, the general physical and mental state improved, and work productivity increased by 23.5% after taking Eleutherococcus. Eleutherococcus also contributed to better recovery after intense physical work.

Adaptogens also possess an anti-alcoholic action, decreasing the desire for alcohol. In one observation involving 148 people, the favorable anti-alcoholic action of Eleutherococcus was noted in 73% of the test subjects in the experimental group.

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H) ANTI-OXIDANT, ANTI-AGING ACTION (PRIME ONE)

As a part of their normal function, body cells make toxic molecules called free radicals-each molecule is missing an electron. Because the free-radical molecule "wants" its full electron complement, it reacts with any molecule from which it can take an electron. When the free radical takes an electron from certain key components in the cell, such as fat, protein or DNA molecules, it damages the cell in a process known as oxidation. In addition to free radicals that occur naturally in the body, they also occur as the result of environmental influences. These influences may include ultraviolet radiation or airborne pollutants such as cigarette smoke - both of which contribute to cell oxidation and may accelerate the aging process.

Anti-oxidants, or oxidation inhibitors, that occur naturally in the human body and in certain foods may block some of this damage by donating electrons to stabilize and neutralize the harmful effects of the free radicals. Adaptogens also possess an anti-oxidant action. Based on biochemical analysis, adaptogens cause a reliable decrease in total cholesterol and b-lipoproteins and increase the level of hydrophilic and lipid anti-oxidants in the blood. In studies by Japanese scientists, it was found that Gomisin N (a component isolated from Schizandra fruit) is a more active anti-oxidant than dl-a tocopherol (Vitamin E).

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I) CARDIOVASCULAR SYSTEM (PRIME ONE AND PRIME PLUS)

Adaptogenic extracts have a favorable influence on the cardiovascular and respiratory systems, providing important support for people carrying out physical workloads. For example, athletes receiving Aralia Mandshurica and working out heavily experienced a lower demand on the cardiovascular system. In another observation of shift workers in the Siberian gas industry, the favorable influence of Eleutherococcus on the dynamics of the cardiovascular system and its protective effects during severe climactic and working conditions were also registered.

Adaptogens render a marked cardioprotective effect, during painful, emotional stress, contributing to a reduction in the adrenore-activity of the heart and the degree damage to the myocardium.

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J) EYESIGHT, COLOR PERCEPTION, COLOR PERCEPTION, HEARING AND VESTIBULAR FUNCTIONS (PRIME ONE)

The adaptogenic plants which compromise the fundamental ingredients of Advantage Marketing Systems products have been shown through extensive laboratory study and clinical trials to support and improve the function of the sensory organs.

In one study, 111,205 physiological tests were conducted to reveal the influence of Eleutherococcus on members of railroad locomotive brigades. The test subjects experienced improved general physical and mental states, increased endurance, improved headache alleviation and prevention and decreased irritability, which is often associated with this high stress occupation.

In another study on 156 people exposed to industrial noise, after taking Eleutherococcus, all the participants reported a marked improvement in their general physical and mental condition, an increase in productivity, an alleviation or complete elimination of ringing in the ears and an improvement in their general hearing ability.

In yet another study, 65 healthy individuals using Eleutherococcus extract (mainly air, sea, rail and automobile commuters or employees) experienced an alleviation or elimination of discomfort from motion sickness and the general discomforts associated with travel.

Schizandra proves particularly valuable for sharpening the eyesight, while Aralia reliably improves perceptual acuity in skill tests. In wide trials, these natural substances have proven to be extremely valuable for professionals whose occupations bring heavy demand on the eyes, ears and other senses. In every study, the sensory functions have shown significant improvement under the influence of the various adaptogens.

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VII. SUMMARY OF THE RESEARCH ON ADAPTOGENS AND THEIR APPLICATIONS

The citations below represent a few among the thousands of references of the world scientific literature to the ingredients of Advantage Marketing Systems products. These selected references are offered as general background to the longstanding widespread use and testing of these ingredients and its purpose is solely informational.

No medical treatment or medical advice is intended by Advantage Marketing Systems, Inc. This publication is intended for informational and educational use.

If anyone has a preexisting medical condition, disease or health problem, we recommend that a physician or health professional be consulted in regards to the use of the products discussed.

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