New Supplement Review

The Rishi's Renewal

Science and the "Science of Life"

If you spend some time talking with health-conscious people, you'll often come across a deep-rooted mistrust – or even disdain – for science, the progress of modern medicine, and the scientific method generally.

Partly, this hostility is caused by the real shortcomings of mainstream medicine, from toxic drugs to doctors who process their patients as they would herd so many cattle. Partly, it's due to frustration with the slow pace of progress on some chronic or age-related diseases. But mostly, it's a case of literally taking medical science for granted. We are as fish, unconscious of the water in which we swim, and of how dependent upon it we have been for our whole lives. The scientific method, applied to the health of the body, has wrought what can only be described as miracles in the course of the last century. Diseases which were deadly plagues to our grandparents have become textbook curiosities or even fables to the children of today. Average lifespan has nearly doubled, from 47 to nearly eighty, in this century. Indeed, aside from poor lifestyle choices and the toxic pollution of the environment, a big part of the reason that heart disease, Alzheimer's disease, and autoimmune disorders have reached epidemic proportions is *exactly* the fact that more and more people are living long enough for them to take hold.

The power of our technology has revealed the structure of the DNA helix and the molecular basis of disease. The heritage of Western medicine, from Pasteur to Watson and Crick, is a rich inheritance of rapid changes and breakthrough discoveries, leading to lives saved from deadly diseases. We have tasted its fruits in our lifetimes, and live with the promise of new revolutions to come.

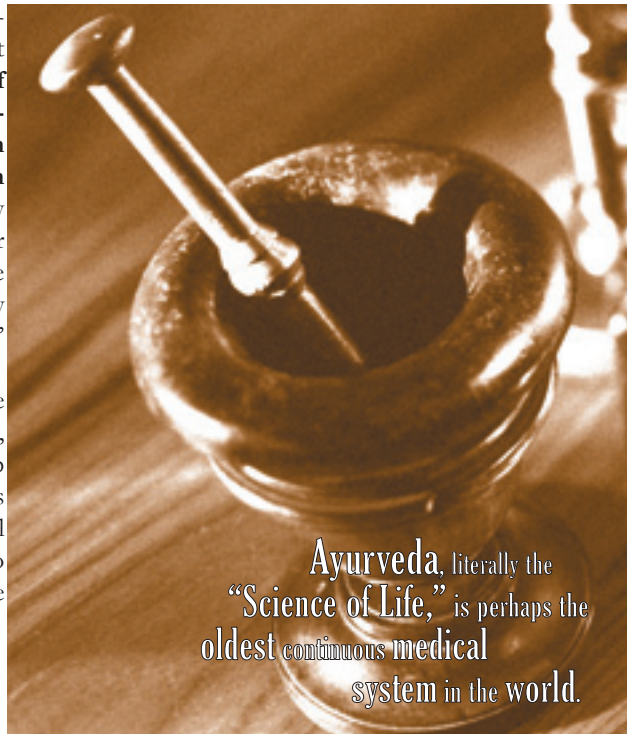
Thanks to the pressure created by the work of pioneering scientists like Dr. Linus Pauling, Dr. Kilmer McCully, and Canada's Dr. Abram Hoffer, solid scientific research into the use of natural substances to support optimal health has exploded in this generation. We've seen the creation of a vast database of reliable science created almost from nothing in a single generation, from painstaking prospective epidemiology to rigorous, well-conducted, placebo-controlled, double-blind trials.. That is, **it is *precisely* the application of the scientific method to nutrition and herbal therapies which has led to such rapid advances in the field**, and to the almost daily revelations of new orthomolecular and botanical revolutions which we are experiencing today as one study leads to another in a "virtuous cycle."

Yes, the herbs and nutrients have always been out there – in the fields, on our tables, in the midwives' herb jars. But the scientific method has allowed us to bring these traditional remedies from isolated cultures to the global village, and to separate the wheat from the chaff – or the rhizome from the root, as it were. Scientific study allows us to put the *testimonials* to the *test*. If some orthodox medical "authorities" refuse to acknowledge the wheat, and many popular health gurus continue to promote the chaff, then the fault lies with not with medical science, but with the laziness or dishonesty of the "experts" in both camps.

The traditional healing systems of the world's peoples have been a true gold mine for scientific research. Digging into such a mine yields a vast load of stones of no value … but it leads to strikes of precious metals. Science's role is that of the refiner's fire: to purify the gold and to burn away the dross.

The Science of Life

No mine has been so rich in strikes as the traditional medicine of India. **Ayurveda**, literally the "**Science of Life**," is perhaps the oldest continuous medical system in the world. From references in the *Rigveda*, an ancient sacred text, we know that Ayurveda was already in practice somewhere between 4500 and 1600 BCE, but in those times it was an *oral* tradition, passed from one generation of Ayurvedic physicians to the next. The first Ayurvedic medical text (the *Charak Samhita*) dates from considerably



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Science and The Science of Life

later (100-400 CE).

Over the course of five millennia, generations of Ayurvedic physicians (*Vaidya*s) accumulated a vast medicine chest of herbs, mineral extracts, and medicinal foods through painstaking collection of the case histories of their patients. This accumulated knowledge – the art of *rasayan* – constitutes Ayurveda's chief legacy. And while there have been herbs used in the Ayurvedic system whose traditional uses have not withstood the test of scientific scrutiny, the number of *rasayan* botanicals whose traditional uses *have* been validated by scientific methodology is a testament to the painstaking care with which the Vaidyas practiced their art. Let's look at a few examples.

Guggul, or *Commiphora mukul*, is a small, thorny tree, closely related to the Biblical myrrh and found widely in India. The resin of the Guggul plant is a mainstay of *rasayan,* being used for a broad variety of conditions. The best-backed application is in maintaining healthy cholesterol balance.

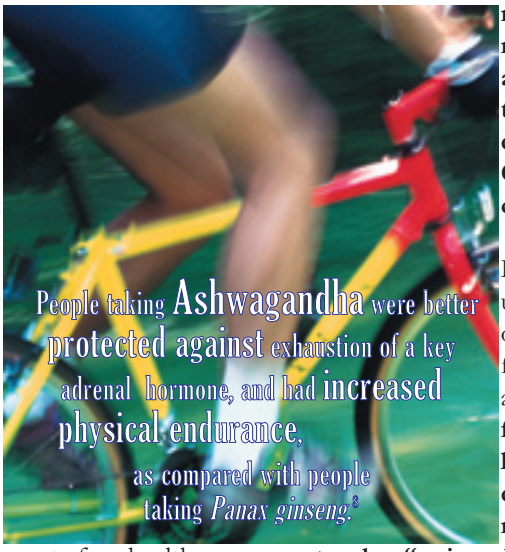
The first modern scientific investigation of Guggul for cholesterol was inspired by a passage in an ancient Ayurvedic textbook, the *Sushruta Samhita*. This passage (15:32) deals with the traditional use of the Guggul resin for disorders of fat metabolism. This included obesity, but also "coating and obstruction of the *nadi* (channels)." This suggested to G.V. Satyavari, a doctoral student at Benaras Hindu University, that Guggul may have been used by the Ayurvedic physicians of old as a treatment for atherosclerosis.

To test her intuition, Dr. Satyavari fed rabbits high-cholesterol diets with or without Guggul resins.[1] She found that the animals who were fed Guggul not only had lower serum cholesterol levels, but also less atherosclerosis in their blood vessels. This preliminary report led first to more animal experiments, and eventually to human clinical trials.

Similar in their ability to reduce total cholesterol (11% vs. 10%) and triglycerides (16.8 vs. 21.6%).

In one double-blind crossover trial[2] comparing a standardized extract of the herb with the cholesterol drug **clofibrate,** the two substances were found to be very similar in their ability to **reduce total cholesterol (11% vs. 10%) and triglycerides (16.8 vs. 21.6%)**. Among those patients who benefitted from the herbal resin, **HDL ("good") cholesterol went up in 60% of patients taking Guggul** supplements; the drug produced no such improvement.

Another double-blind, placebo-controlled trial of Guggul resin[3] confirmed these results, reporting decreases in total cholesterol (11.7%), LDL "bad" cholesterol, (12.5%), and even triglycerides (12%), with no change in HDL in the active group, while placebo subjects were stuck where they had been at the start of the trial. This study also found *new* heart-healthy benefits of the Guggul extract: **subjects administered Guggul had less free radical damage to lipids**, which (granted the role played by such damage in triggering LDL's part in the development of atherosclerosis) would also be expected to be helpful for heart health concerns. In another important report, a study in humans[4] found that **Guggul reduces spontaneous blood clots by increasing fibrinolysis**, the breakup of the blood clots which can both trigger a heart attack and form part of the matrix of atherosclerotic plaques. **Guggul**'s place as herbal support for healthy cholesterol balance is on solid ground.



Ashwagandha (*Withania somnifera*), the so-called "Indian ginseng," is actually not a ginseng species at all. But make no mistake: **Ashwagandha** has the defining characteristics of a classic adaptogen.[7] Indeed, the "adaptogenic" label has been stuck onto so wide a range of herbs, with such vastly different properties, that it has become an almost meaningless term on the herbal marketplace, and even in some scientific literature.[7a] As science defines these other botanicals' effects and mechanisms of action more precisely, the blanket tag "adaptogen" will no doubt be replaced by a series of more precise terms for substances which help the body adapt to stress in different ways.

In a controlled study in humans stressed with repeated, heavy swimming, **people taking Ashwagandha were better protected against the ulcers, depletion of vitamin C, and exhaustion of a key adrenal hormone, and had increased physical endurance,** as compared with people taking *Panax ginseng.*[8] Similar studies have shown that providing lab animals with **Ashwagandha leads to better stress tolerance,[9] longer swimming times,[10,11] greater maintenance of their glycogen energy supplies,[10] the development of more heart muscle mass,[10] protection against shrinkage of the adrenals and the depletion of vitamin C,[11] and more muscle weight gains.[12]**

Likewise, animals undergo a great deal of stress when under forced restraint; such animals experience **fewer gastric ulcers, less behavioral despair, and less need to pump out natural "pain killers"** if given **Ashwagandha**.[13]

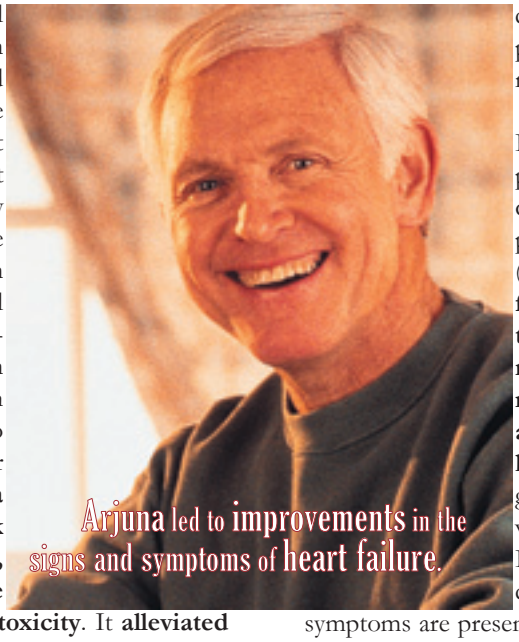
In a double-blind trial in humans,[14] 101 healthy men (aged 50 to 59) were evaluated for various aging parameters over the course of a year. **Increased red blood cell levels, greater libido, and lower erythrocyte sedimentation rate (a measure of chronic inflammation) were observed in the men who got Ashwagandha** instead of the dummy pills. If you suffer with chronic stress or flagging energy, then Ayurvedic tradition and a growing body of scientific research suggest that **Ashwagandha** may be worth looking into.

Picrorhiza kurroa, nicknamed "Kutki" in the common language of India and called Hellbore by the Europeans, is a remarkable liver-support herb. **Picrorhiza has been found to protect the liver or its cells against, or help heal the liver or its cells after, exposure to a remarkable number of known liver toxins**, including aflatoxin,[15,16,34] carbon tetrachloride,[17-19] galactosamine,[17,20-24,35] paracetamol,[24, 36] thioacetamide,[17,21,37] oxytetracycline,[39] N-nitrosodiethylamine,[25] alcohol,[26,27] sodium stibogluconate (during use as an antiparasitic drug),[28] *Amanita phalloides* (toadstool) poisoning,[29] and monocrotaline.[30] **Picrorhiza** has also been found to protect animals' livers from the toxic effects of malaria infection[31,32] and the damage caused to the liver by removing, and then suddenly restoring, the organ's oxygen supply.[33] When **compared with milk thistle (*Silybum marianum*), an herb from the Western tradition which is famed for its liver-protective effects, Picrorhiza has been found to work as well[34-37] or better[38-41]** at protecting the liver or its cells from toxicity and restoring it to healthy function.

Test-tube and animal studies suggest that Picrorhiza may protect against viral hepatitis, such as Hepatitis B (HepB).[42-44] In patients with non-HepB viral hepatitis, a randomised, double-blind placebo controlled human trial[20] found that two weeks of **Picrorhiza therapy led patients to experience significantly greater reductions in liver enzymes** (bilirubin, aspartate aminotransferase (AST), and alanine aminotransferase (ALT)) as compared to patients taking a dummy pill. **People taking Picrorhiza also saw their bilirubin levels return to the normal range twice as fast:** the average patient taking the placebo waited 75.9 days for his or her bilirubin to drop into the normal range (an average of 0.25 mg/dL [anything under 0.3 mg/dL is considered normal]); but those taking **Picrorhiza** achieved this level in just 27.44 days. Clearly, if liver health is a concern for you, and you're looking at the choices available from Nature's pharmacy, **Picrorhiza** should be on the short list of options to discuss with your doctor.

Picrorhiza protects against a remarkable number of known liver toxins

There's been a great surge of interest in ***Terminali arjuna*** ever since its heart-health benefits were singled out by Dr. Peter J. D'Adamo in his latest book, *Live Right for Your Type*. But its bark has been used to support proper cardiovascular function in the Ayurvedic tradition for about 300 years, and this traditional use has been validated by solid science over the course recent decades. In a recent open trial,[45] twenty patients with stable angina took either an **Arjuna**-based herbal formula, or isosorbide mononitrate (an angina drug which works similarly to nitroglycerin), for twelve weeks. **Arjuna was found to work as well as the drug, but with fewer side effects or signs of toxicity**. It **alleviated the symptoms of 80%** of the angina patients, which is comparable to the 70% of patients relieved by the drug; similarly**, Arjuna slashed the e frequency of angina attacks by 67%,** with the drug again giving similar performance at 73% fewer attacks. The results of a cardiac stress test (which tests how well the heart can cope during exercise, when the body's need for oxygen puts extra demands on the heart) showed some nominal improvements over the course of the study in both groups, the changes was not found to be statistically significant in either group.



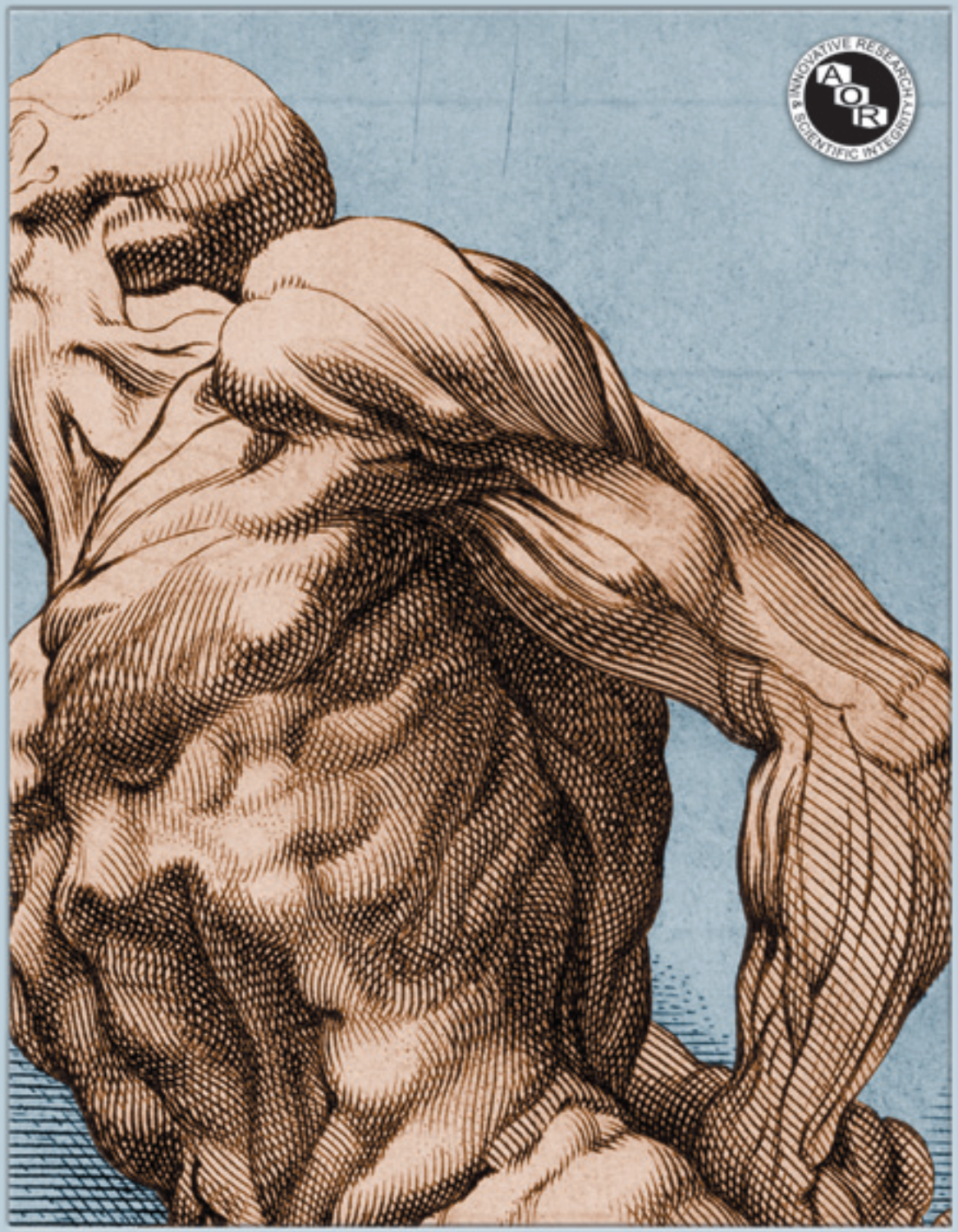
In an earlier trial in people with both stable and unstable angina,[46] three months' **Arjuna** supplementation **cut angina attacks by 50%** among the stable angina patients. These patients also experienced **significant reductions in systolic blood pressure**, while **exercise tolerance improved,** with patients taking longer to develop chest pains and signs of oxygen starvation on the electrocardiogram (ECG). While patients with *unstable* angina did not gain these benefits, **both patient groups experienced improvements in the function of the left ventricle,** the chamber of the heart which sends blood out to the rest of the body and whose dysfunction is a key part of unstable angina.

In a double-blind, placebo-controlled crossover study in patients with CHF (**congestive heart failure**),[47] **people taking Arjuna experienced improvements in the signs and symptoms of heart failure.** The grade of heart failure was reduced from class IV (the most serious degree, when your symptoms are present even at rest, and *any* physical activity simply makes things worse)

Ribogen plus Creatine

Ribogen powder

Ribogen capsules



En'ergy n. vigour, force, activity; source(s) of power, as Ribogen, Creatine etc.; for work or output of power -energet'ic a. -energetically adv.- energize vt. give vigour to.

Lyprinol.

The powderful support of ETA omega-3.

to an average class III (where you may become tired and have difficulty breathing when you exercise, but you're comfortable at rest). As well, **their hearts were able to pump 10% more blood with each stroke while using Arjuna**, while their hearts' efficiency at emptying blood out the left ventricle (**ejection fraction) jumped by nearly one-fifth** (19.5%).

This group of people with heart failure was then tracked after the trial itself had ended as they continued taking **Arjuna** along with more conventional medications. As a group, **these people's symptoms, exercise tolerance, disease class, and quality of life continued to improve over the course of the next two years (on average) of Arjuna use**.

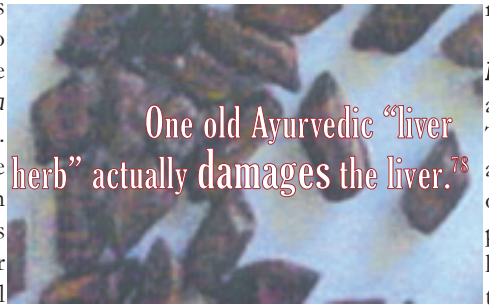
These herbs from the Ayurvedic medicine chest – **Guggul, Ashwagandha, Picrorhiza**, and **Arjuna** – are great examples of botanicals whose traditional use for specific health concerns has been supported by solid scientific research. Still, no one choice is right for everyone, and an herb which works wonderfully for your best friend may not work well for you. An herb which is found helpful for 80% of people using it still leaves one person in five looking for a better solution. You should consult with your doctor before using any herb or supplement program. But science has shown that there is a solid basis for the traditional Ayurvedic use of these herbs for these conditions. The same does not hold for some others.

Pitfalls and Promises

For instance, a recent study compared several Ayurvedic formulas for acne with placebo in a randomized, double-blind, controlled trial.[48] Of the four formulas tested – Sookshma Triphala, Thiostanin, Amalakimashi Vati, and Sunder Vati – only one worked any better than placebo at cutting down on the number of blemishes, their severity, or the overall change in facial acne.

In another study, RA-1, a version of a time-trusted Ayurvedic formula for the joints, was tested in a randomized, double-blind, placebo-controlled trial in 182 people suffering with active, chronic rheumatoid arthritis.[49] Although the swelling of the joints and rheumatoid factor did look better in the group getting RA-1, no clinical results were found to be significantly superior to the dummy pill, despite having a large enough group of sufferers to detect any such changes.

But the list of Ayurvedic failures includes examples with problems much more chilling than just not *working* for their traditional application. **Some traditional Ayurvedic medicines can be deadly.** One of the scarier examples is *Senna occidentalis* (formerly called *Cassia occidentalis,* and popularly known as "stinking weed" – not to be confused with the laxative herb *Cassia senna* or *Cassia actufolia*). Extracts of the seed have traditionally been used in Ayurvedic medicine as digestive aids and liver tonics, and are still included in many Ayurvedic liver formulas today. While no human studies exist to directly address the issue, studies in chickens,[50] rabbits,[51] goats,[52,53] and horses[54] have found that **ingestion of this Ayurvedic "liver herb" actually *damages* the liver**.



In the case of one *S. occidentalis*–containing preparation, the only double-blind, placebo-controlled trial to look at long-term patient survival found that **use of the Ayurvedic liver formula actually *increased* the death rate** in patients with alcoholic cirrhosis.[55] Use of the same formula by seven hepatitis victims at the Penschikenta hospital in the former Soviet Union was reported to have been associated with **two of the seven people developing toxic epidermal necrolysis (Lyell's syndrome – multiple large blisters that grow together, leading to the sloughing of all or most of the skin and mucous membranes) beginning within 11 hours of starting a course of "treatment."**[56] Another case of Lyell's syndrome associated with the use of this Ayurvedic preparation was soon reported independently.[57,58]

Furthermore, *S. occidentalis* seed also interferes with the functioning of the mitochondria (the cellular "power plants") in many species,[59-63] leading to the degeneration of the muscles of the heart and the rest of the body; this myopathy is sometimes seen in cattle grazing on the plant in the Southeastern United States, where it grows wild. The same impairment of the mitochondria leads to nerve damage in chickens.[61] *Senna occidentalis* is one case where you'll want to steer clear of *exclusive* reliance on tradition.

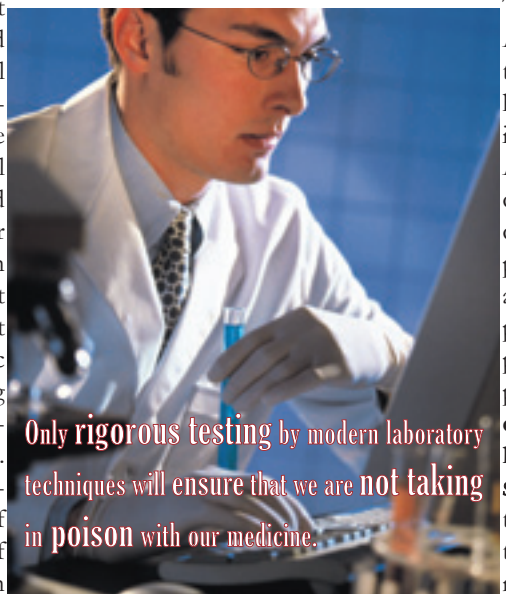
Bhasms are another alarming example. These ground, heat- and sunlight-treated oxidized mineral preparations are often key ingredients in traditional Ayurvedic formulas. Unfortunately, these preparations are often rich in heavy metals – indeed, **some *bhasms* are explicitly formulated with toxins such as mercury, arsenic, or antimony as their active ingredients**. Many cases of heavy metal poisoning have been linked with the use of traditional Ayurvedic formulas (which often contain *bhasms*),[64-71] and there are also specific links with **non-cirrhotic portal fibrosis,** a kind of liver damage known to be associated with arsenic poisoning.[69,71]

Some of the more hidebound Ayurvedic physicians insist that the traditional *bhasm* preparation methods ensure the non-toxicity of the heavy metals – or that such methods actually render a toxin into a panacea . They might claim that the above reports can be laid down to "guilt by association," since the *bhasms* are present with numerous other ingredients in the formula which might be the real culprits.

This idea can pretty much be laid to rest, thanks to a study of a group of 29 people taking Ayurvedic preparations[66] which found direct correlations between the users' body lead burden and the **levels of lead present in their "remedies," which varied wildly from 0.9 to *72,990 micrograms per gram of material*.** Five of these 29 patients had acute lead toxicity and required immediate chelation therapy. One group of scientists, who conducted careful analyses on a series of *bhasm* samples, found many to be high in **polycyclic aromatic hydrocarbons (PAH),** a major class of carcinogens often found in charbroiled or burned meats.[72]

Likewise, people who want to take advantage of the power of Ayurvedic medicines must also be aware of the realities of today's environmental conditions. The soil in which *rasayan* herbals have been grown for innumerable generations may have been pristine in the days of the Rishis, but the same soil is today often contaminated with pesticides and heavy metals, and even the sacred Ganges river has become a virtual toxic waste dump. The old harvesting and processing methods are not enough: **special care – including rigorous testing by modern laboratory techniques – must be taken to ensure that we are not taking in poison with our medicine**.

Another stumbling block on the path to the integration of Eastern tradition with Western science has been the **proper identification of the plant species** involved. The ongoing mystery of the identity of the *soma*, the Ayurvedic "Nectar of Life,"[73-75] is the most famous case, but probably the least important for day-to-day use of botanicals rooted in Ayurvedic tradition. Thus, the Ayurvedic textbooks are adamant that an herbal called "Brahmi" is excellent way to support a failing memory – but the actual identity of the plant has become confused over time, with some *Vaidya*s correctly prescribing *Bacopa monniera Linn.*, while others have mistakenly identified Brahmi with an unrelated species – *Centella asiatica*. *Centella* is a great herbal energizer and makes the brain feel "wide awake," so people taking it have greater overall mental performance (and certainly *feel* like their brains have been turbo-charged), but this herb does not have *Bacopa*'s specific memory-enhancing powers or brain-protective effects. Mistaken herbal identity was at the root of a small epidemic of urinary tract cancers in Belgium a couple of years ago.[76] Botanical precision in identifying species is a crucial.



The concentration of active ingredients in an herbal product is also an unique challenge for modern Westerners entering the stream of Ayurvedic medicine. We all know that an orange can vary wildly in the "orangeyness" of its taste, depending on soil, climate, season, ripeness, variety, and so forth. These differences in flavor reflect underlying differences in the two fruits' concentrations of key phytochemicals which are present in the two samples.

We can tell this difference immediately in a fruit. The question is, how do we tell the difference in phytochemical potency in an herb? Just like oranges, the potency of *rasayan* herbals can vary wildly from one plant to another. Empirical methods of distinguishing potent herbs from ones which have not yet reached their prime – or which have long exceeded it – were a part of the training of the Ayurvedic physician of millennia past. The Ayurvedic physicians of old chose herbs using methods similar to those used today to select produce, albeit involving intensive training and years of experience. But such methods can never be more than rules-of thumb.

Today's practitioners of Ayurvedic medine in the West (as well as health-food stores selling products from the Ayurvedic pharmacy) can't even rely on *these* crude methods: the end product comes from across the sea, prepared and processed by a third party. **The only way to ensure a reliable herbal product is to *standardize*** for either the active ingredients themselves, or key markers of the herb's activity – a process which in turn requires careful study of the herb's chemistry. **Ashwagandha**, for instance, has long been standardized to its content of **Withaferin A**, which is likely to be involved in at least some of the herb's effects;[77] but research suggests that the more recently-identified **sitoindosides** are the key factor responsible for the herb's "adaptogenic" powers.[13] A well-formulated **Ashwagandha** product will thus contain a defined quantity of the sitoindosides, at a minimum; and the ideal strategy would be to standardize for *both* of these key molecules.

East Meets West

Many modern Westerners are attracted by the holism of traditionally-practiced Ayurveda, from its use of the *doshas* and *prakriti*, to the care with which its practitioners are trained to nurture their patients, to its individualized prescriptions for diet, exercise, and spiritual discipline. But tradition, like all living things, can only be kept alive when it is kept moving. In bringing Ayurveda to the West, we must look to the wisdom of the tradition itself to point the way to promising new herbs,

Getting to the Heart of Wild Bear's Garlic

and to the rigor of Western scientific methods in formulation, purification, and standardization of the botanicals, and in validation that they truly are safe and effective. Like Siva and Sakti, science and tradition may seem to be opposite poles, but they flow into one another at their extremes, are touched by one another in their cores, and are ultimately one. In making our journey to the East, let us use the Ayurvedic traditions as our guide, and the Western scientific method as our interpreter. Science comes not to destroy, but to fulfill, the potential of the Ayurvedic tradition. Thus will we create anew "the Science of Life."

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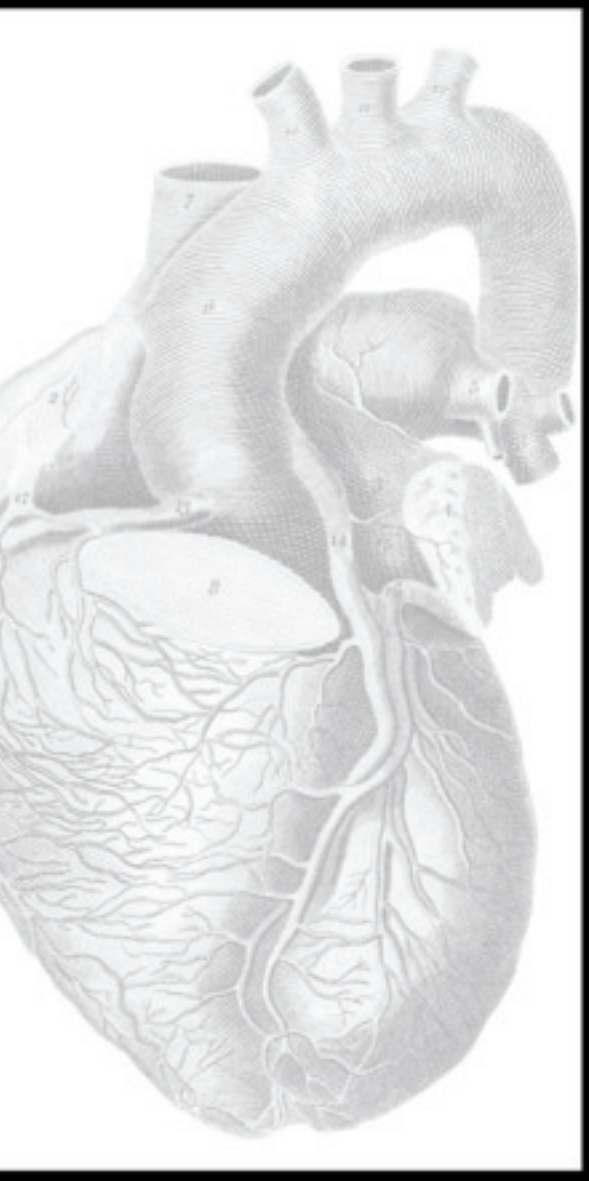
Three little letters... against one big problem!



Homocysteine is a toxic amino acid made from your body as it metabolizes the essential amino acid methionine. It's now been shown that high homocysteine is a risk factor for vascular disease similar to that of smoking or high cholesterol levels.

Homocysteine can't be lowered by reducing your methionine intake ... but it can be *raised* if you aren't getting enough of the key nutrients needed by your body to "recycle" homocysteine into the body's master methylator, s-adenosylmethionine (**SAMet**, or "SAMe.").

Trimethylglycine (TMG) is one of those key nutrients, and unlike folic acid, B12, or B6, it can't be found at good doses in multivitamins. Studies show that TMG can lower homocysteine levels even in people with metabolic disorders that make them unable to detoxify it through normal means. And keeping homocysteine low, and methylation up, has health benefits extending well beyond heart disease.

TMG. It's TLC ... against CVD!

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