AYURVEDA and INDO-TIBETAN MATERIA MEDICA: ALTERNATIVE GOES MAINSTREAM FOR A BETTER HEALTH CARE DELIVERY

By Vladimir Badmaev, M.D., Ph.D. and Muhammed Majeed, Ph.D.

The alternative medicine movement owes its beginnings to people who understood that health care obtained from physicians, pharmacists, osteopathic doctors, chiropractors, and other helath professionals, needs to be supported by a more accessible self applied health care. Consequently the alternative medicine movement was born at the MLM meetings, in the basements of private houses, at mom&papa stores and businesses, but not in the Universities, Medical Schools or doctors' offices. This has been a fascinating sociological phenomenon, from which we can and should learn an important lesson as how a progress of any kind is being made.

Since "the alternative goes mainstream" the turn is now for health professionals to educate themselves in this medical knowledge and to merge this new acquired knowledge with their solid academic backgrounds for benefit of a patient.

This article highlights some of the experimental knowledge acquired on materia medica of an important members of the alternative medicine family, the Ayurveda medicine and Tibetan medicine.

There are some important characteristics to be pointed out of the therapeutic modalities offered by these medical traditions.

1. Foremost characteristic is safety. This is because the individual botanicals, minerals and the compound formulae have been established there through an empirical process lasting several hundred to several thousand years. Because of that process many of those treatments have outstanding record of safety and effectiveness. In addition some of the botanicals used in Ayurveda -- for example, peppers -- are among the first plants to be cultivated by man and have been in use for several thousands years.

2. Broad action on the macro-organism. In fact terms adaptogen and the most recent one bioprotectant
were developed on the basis of the mechanisms of action of several plants derived from Ayurveda materia medica. For example curcuminoids or derivatives of Curcuma longa (turmeric) are being recognized now as versatile phenolic anti-oxidants, providing two-pronged anti-oxidant activity: *prevention* of free radical formation and *intervention* to neutralize existing free radicals. This action of curcuminoids exemplifies a new mechanism characteristic of the therapeutical ingredients called "bioprotectants".

3. Attention to the digestive processes The other recognized feature of Ayurveda and related arts like Tibetan medicine is its emphasis on proper functioning of the digestive tract, specifically digestion and absorption, or bioavailability, of food, nutrients, and (when necessary) drugs. Primary care for the digestive tract is approached in Ayurveda by providing a digestive formula to correct the suspected nutritional problem. Secondary care is provided by supplementing various formula with a digestion-enhancing component. Importantly the nutrient for the "digestive process" is understood in Ayurveda not only as food that we eat, but also air that we breathe and significantly the "food" that feeds our mental and emotional processes.

Gastroenterology - clinical trials

1. Nutrient bioavailability

Recent clinical studies done by Sabinsa Inc. of New Jersey have shown that the alkaloid piperine isolated from Piper nigrum (fam. Piperaceae) black pepper enhances nutrients bioavailability. In several separate double-blind clinical trials healthy volunteers were administered 95% pure

piperine in a dose of 5 mg per day together with a studied nutrient. Vitamin B6 was administered at one time dose of 100 mg, beta carotene was administered at a dose of 15 mg/day (14 days), vitamin C was administered at a dose of 100 mg/day (5 days), selenium was administered at 50 mcg/day (42 days) and Coenzyme Q10 was administered at 120 mg/day (21 days). Results showed that gastrointestinal absorption of all the studied nutrients, as evaluated by blood levels, increased significantly when administered with alkaloid piperine, compared to the control groups receiving a supplement alone: vitamin B6 resulted in 2.5 times higher blood levels two hours after supplementation; blood levels of beta carotene increased by 60% over the control levels; blood levels of selenium resulted in a 30% increase; blood levels of Coenzyme Q10 increased by 30% (Badmaev V, Majeed M, Passwater R. Alt Ther. July 1996; 2(4):59-67).

2. Upper gastrointestinal disorders

The fruits of Terminalia chebula (fam. Combretaceae), Terminalia belerica (fam. Combretaceae), and Emblica officinalis (fam. Euphrobiaceae) combined in equal proportions are known as Triphala. This formula and its individual ingrtedients are highly valued in Ayurveda, being compared to a "good manager of the house" in aiding digestion, nutrient absorption and body metabolism. Triphala is used either alone or in a compound formula in a broad range of digestive disorders, including psychosomatic conditions affecting GI tract. Triphala is a prime example of adaptogenic herbals, with a particular relevance to the digestive tract and the body metabolism.

Emblica officinalis fruit powder vs. antacid were evaluated in a 4 week study of 38 patients with dyspepsia and with or without stomach ulcer. Emblica was used 3 gm per dose, three times a day; gel antacid was used 30 ml per dose, up to 6 times a day. The improvement in the clinical symptoms score (belching, fullness, heartburn, regurgitation, nausea and vomiting) in the ulcer dyspepsia was from the initial 4.2 to o.4 ($p<0.01$)post treatment score for antacid group, and 4.6 to 0.6 ($p<0.05$) for the Emblica group. The fall in peak acid output was not statistically significant in the two groups. Endoscopic examination showed all ulcers in the antacid group in the process of healing, while all but one patient in Emblica group had completely healed ulcers. In the non-ulcer group antacid and Emblica produced a significant decrease in clinical symptoms score from 4.4 to 1.53 ($p<0.01$) and 5.0 to 1.61 ($p<0.01$) respectively. The peak acid output fell for antacid and Emblica treated patients from 20.01 mEq/h to 14.7 mEq/h ($p<0.001$) and 20.56 mEq/h to 15.5 mEq/h ($p<0.001$) respectively (Chawla YK. Indian J Med Res 76 (suppl) December 1982: 95-98).

Tisanax a traditional multicomponent gastrointestinal formula of Tibetan origin, in form of 255 mg tablets, has been tested in a 4 week open field study in Switzerland by four independently working physicians. A total of 52 patients of both genders presenting with irregular gastro-intestinal (GI) functions manifested by constipation, flatulence, feeling of fullness, heartburn and belching participated in these studies. The 43 participants reported a significant ($p<0.001$) GI improvement after using Tisanax 1 to 3 tablets a day. Tisanax eliminated gas in 80% of patients, heartburn in 83%, abdominal fullness in 76% and constipation in 74%. The 85% of patients reported relief within one week after taking 1 to 3 tablets per day. Those patients who had no history of laxatives use or previously used mild laxatives benefited most from therapy with Tisanax (Badmaev, V unpublished data, 1997).

3. Liver disorders - clinical trials

Protection against the negative impact of inappropriate nutrition is provided almost entirely by the liver. The liver with its foot-soldiers,i.e. macrophages, and biotransforming enzymes involved in the process of deactivating toxins, is our body's first line of defense against a broad range of toxic materials. Making sure the liver is functioning properly is key in succesful treatment of many diseases.

The powdered leaves of Phyllanthus amarus (fam. Euphorbiaceae) Sanskrit name Bahupatra were used in clinical studies evaluating its usefulness in patients suffering from chronic damage

to the liver due to the protracted hepatitis B virus infection. This type of infection results in inability of the body's immune system to eliminate the virus from the liver cells. This condition is described as a carrier state, because a patient is continously harboring or carrying the virus. Some of the components of the virus detectable in the carrier state in the blood are: HBsAg or the surface antigen of the virus and HBeAg or the envelope antigen of the virus. In addition, the carrier state may be confirmed by the presence of antibodies directed against the core of the virus or the anti-HBc antibodies. The antibodies indicate that human organism is attempting to defend itself against the infection, but the longer this defense goes on the more collateral damage is done to the liver..

The powdered leaves of P. amarus were given in form of capsules to the group of 37 patients with chronic B viral hepatitis in a dose of 200 mg three times a day for 30 days. The 23 patients with identical diagnosis received the placebo capsules. The 22 of 37 (59%) of the P. amarus treated patients had lost the viral antigen when tested 15-20 days after the end of the treatment. In distinction only one of 23 (4%) placebo-treated patients lost the carrier status. As much as monitoring the outpatients allowed, some of the participants who cleared the viral antigen were followed-up in the laboratory tests for up to 9 months. None of those followed-up cases had re-acquired the antigen, which might indicate a complete success of the treatment. Only one of the 37 patients treated with P. amarus, a two and a half years old boy developed an untoward effects in form of a skin rash after 10 days of the therapy. The supervising physician believed that the rash was related to roundworm infection which was found in the patient, rather than the P. amarus treatment.

The authors of the paper discuss a possible mechanism of P. amarus based on the preclinical studies done with hepatitis B like viruses chronically infecting woodchucks. They postulate that P. amarus may inhibit proliferation of the virus by directly inhibiting replication (making self-copy of the virus) of the genetic material of the virus (DNA), i.e. inhibiting the DNA polymerase of the hepatitis virus. Phylanthus amarus contains sesquiterpene alkaloids. The active principle or principles responsible for the hepatoprotective action of P. amarus has yet to be established.

II. Psychiatry - clinical trials

1. Management of mental depression

Equal to the attention Ayurveda gives to digestive functions of the organism is care for mental and emotional well-being. In fact, processing of thoughts and emotions by appropriate centers in the brain is often referred to as "digestion at mental and emotional levels." Ayurveda links many physical disorders to a temporary or chronic deterioration of our psychical and emotional comfort. While it is understood that the quality of our psychosomatic life can not be guaranteed with pharmacological treatments, states of overwhelming anxiety, depression or agitation should be and can be minimized with the help of pharmacology.

Withania somnifera roots (fam. Solanaceae), known in Sanskrit as Ashwagandha in combination with Mucuna pruriens seeds (fam. Papilionaceae) have been evaluated for the treatment of deppressive illness in twenty five patients with endogenous and reactive types of depression. Ashwagandha and Mucuna were given in a dose of 6 gm each in the morning and evening with milk for two months. The severity of depression and anxiety was evaluated by a self-evaluation scale at the beginning of study, after one month and after two months. A statistically significant ($p<0.001$) improvement in depression and anxiety symptoms scores was noted at the end of the two months. This included mood elevation and a reported feeling of well being. At the end of two months treatment 48% of the patients were "cured", 36% "improved", 8% had "no improvement" and 8% had a "relapse" (Singh RH et al. JRAS. 1989; Vol.XI, No. 1-4: 1-6). Ashwagandha contains steroidal lactones which are identified as withanolides; extract standardized for 1.5% withanolides. Mucuna proriens seeds contain oleic acid.

2. Management of anxiety neurosis

Bacopa monniera herb (fam. Scrophulariaceae) was evaluated in a 4 week treatment of anxiety neurosis in 35 patients. Bacopa was administered in form of a syrup 15 ml two times daily containing 12 gm of the crude drug. The patients were assessed on the following clinical parameters anxiety level (Sinha anxiety scale), adjustement level (Asthana adjustement scale), mental fatigue rate (Joshi's digit cancellation test) and immediate memory span (Joshi's digit retention scale). The mean anxiety level in patients after 4 weeks of treatment was 40.70 as compared to its pretreatment value 49.05 ($p<0.05$). The mean maladjustement level in patients after 4 weeks of treatment was 153.58 which was significantly lower than its corresponding pretreatment value 166.28 ($p<0.01$). The mental fatigue rate determined in total daily work output in treated patients was 855.8 as compared to its corresponding pretreatment value 711.15 ($p<0.001$). The immediate memory span score was significantly increased from initial mean value 5.94 to 6.37 after four weeks of treatment ($p<0.01$). In addition to these findings the four week therapy resulted in significant decrease in the systolic blood pressure from mean value 117 mm/Hg to 112 mm/Hg ($p<0.05$) and the significant increase in breath holding time from mean value 35 seconds to 48 seconds ($p<0.001$) (Singh RH, Singh L J Res Ayur Siddha. 1980; 1:133-148). Bacopa monniera herb contains saponin compounds named Bacoside A and Bacoside B.

3. Management of substance abuse problem

The multicomponent formula of Smoker's Relief™ originating in Tibetan medicine, in the form of a 330 mg lozenge, was evaluated in an open field clinical study in three countries: the USA, Switzerland and Canada. The study included 51 adult smokers of both genders, who stated that they were willing to stop smoking with help of the lozenge. A minimum of 9 lozenges per day were taken. The blend of herbs in the formula was known since the historical time of "opium wars" , when it was used to replace the craving for cigarette, and to produce a sensory incompatibility between the taste of smoke and the blend of herbs. Of the 51 participants a total of 34 completed the test successfully either by quitting smoking or reducing the number of cigarettes smoked per day. Of those who completed test successfully 22 quit smoking, and of those 15 were not smoking when they were interviewed four months after the date they quit smoking (Badmaev, V. unpublished data, 1997).

III. Pulmonary medicine - clinical and in vitro trials

1. treatment of bronchial asthma

In an analogous way to the digestive tract delivering nutrients, air passages deliver the most important nutrient of all - oxygen. In fact, the main Ayurvedic formula for better delivery of nutrients at the gastrointestinal level is used in bronchopulmonary conditions as well.

Piper longum or long pepper traditionally known in Sanskrit as Pippali (fam. Piperaceae), has been used in Ayurveda and related Unani medicine in the prevention and treatment of bronchial asthma. In a study involving 20 children, 5 to 12 years old, suffering from bronchial asthma with confirmed sensitivity to house dust mite (HDM), long pepper fruits were administered in form of 150 mg (children 5 years old or younger) or 250 mg (children 5 to 12 years old) capsules for five weeks (week 1-1capsule a day, week 2-2, week 3-3, week 4-2, week 5-1). At the end of 5 weeks all patients showed significant clinical improvement as assessed by the pulmonary functions tests and decrease in frequency and severity of asthma attacks and decrease sensitivity to HDM skin test. The FVC, FEV1 and MMEFR values were significantly ($p <0.05$) increased: 1.2253(before treatment)/1.5123(after); 852.17/1061; 48.88/73.38. The follow-up of the patients status after one year revealed 11 patients with no recurrence of asthma attacks, 3 with moderate improvement, 3 with no improvement and 3 were not available for the follow-up evaluation.
(Dahanukar AS et al. Ind Drugs. June 1984: 384-388). Piper longum contains a minimum of 1% of alkaloid piperine, however other yet to be identified components may be responsible for the therapeutic action in patients with asthma.

Another important example of an Ayurveda derived herb used in respiratory conditions is Tylophora indica (asthmatica) Sanskrit named Anthrapachaka (fam. Asclepiadaceae). Tylophora

asthmatica was tested in a 12 week double-blind study in 110 patients with bronchial asthma. The diagnosis of asthma was based on a history of recurrent paroxysmal attacks of dyspnea at rest relieved by epinephrine or ephedrine. The patients were randomly assigned active treatment, one leaf of Tylophora a day for six days to be chewed and swallowed early in the morning, and matched placebo consisting of spinach leaf. The patient status was evaluated based on the interview and physical examination of a patient. Of the 53 patients receiving active treatment 33 (62%) improved by the end of first week, as compared to 16 (28%) out of 57 patients improved on placebo. At four weeks followup the respective figures were 37% and 11%; at 8 weeks, 30% and 7.4%; and at 12 weeks, 16% and 0%. The incidence of side effects such as sore throat, loss of tase for salt, and/or morning nausea and vomiting was 53% in the active treatment group and 9% in the placebo group. (Shivpuri DN et al. J Allergy. March 1969:145-150). Tylophora indica contains alkaloid tylophorine; standardized extract contains approximately 0.1% of tylophorine.

Ledretan a multicomponent formula of Tibetan origin was tested *in vitro* with the MDCK epithelial tissue culture cell line for its traditionally recognized anti-viral effect, particularly in the treatment of upper-respiratory viral conditions. Specifically it was tested for its protective activity against cytopathic effects caused by influenza A virus. The whole formula and its 23 individual components were tested in the same system. The results indicate that the formula is active in protecting epithelial cells against damage caused by influenza virus. One of the most active components in anti-flu activity of Ledretan was shown to be Terminalia chebulae, fam. Combretaceae. The whole formula, however, was more effective than the individual herbs (Badmaev, V. unpublished data, 1997).

IV. Cardiology - clinical trials

1. Management of cardiovascular disease

Combination of Inula racemosa (fam. Compositae) and Commiphora mukul (fam. Burseraceae) gum or gugulipid was evaluated in a 6 months study of patients with ischemic heart disease. The formula in form of 500 mg tablets was administered in a total daily dose of 6 to 8 gm to patints presenting with precordial pain, dyspnea and laboratory data indicating elevated choleterol and triglycerides. The treatment resulted improvement of precordial pain in 150 patients, elimination of the pain in 50 patients, improvement in dyspnea in 90 patients and elimination of dyspnea in 110 patients. The mean value of blood cholesterol decreased from 308 mg/dl prior to the treatment to 188.92 after the treatment (38.6% reduction; $p<0.001$). The mean triglyceride levels of 150.95 mg/dl decreased to 74.48 (50.7% reduction; $p<0.001$). The treatment also resulted in a improvement of the ECG pattern in 170 patients (Singh RP et al. Int J Pharmacognosy. 1993; 31(2):147-160). Inula contains alantolactone and isoalantolactone; gugulipid cantains guggulsterones; standardized extract contains 2.5 to 3.5 % guggulsterones.

The formula of Badmaev 28 is one of the best clinically tested traditional multicomponent formulations known. The other formula's name Padma was derived from the family name of Badma or Padma (Russicized to Badmaev), both names stand for Sanskrit name of the plant of lotus. The formula has been developed by five generations of physicians in Badmaev family and it is rooted in principles of Tibetan medicine. The usefulness of the formula in the treatment of peripheral vascular disease (PVD) was first clinically evaluated by Hurlimann[20] in late 1970's (Schweiz Rundsch Med 1979; 67: 1407-1409). Subsequently four double blind trials of the formula in PVD have followed (Schweiz Med Wochenschr. 1985; 115: 752-756; Angiology 1993; 44: 863-867; Alt Ther Health Med 1995; 1(3): 44-49). In the 12 week study done by Hurlimann the formula administered up to 6 tablets (each tablet 500 mg) a day increased pain free walking distance in PVD patients by 54% . The clinical research that followed indicated that the 16 week regimen resulted in further increase of pain free walking distance by 93% to 112%. By comparison known synthetic drugs studied in PVD patients, e.g. Pentoxifylline (Surgery 1982; 92: 966) and Neftidrofuryl (Med Welt 1979; 30: 269-272) were able to increase the pain free walking distance by 58% in a 24 weeks study and by 70% in a 24 weeks study respectively.

V. Chronic inflammatory disorders - clinical trials

1. Management of arthritis

Management of chronic and debilitating disorders, such as various forms of arthritis, is a *forte* of Ayurvedic therapy. Curcuma longa (or turmeric fam. Zingiberaceae), Boswellia serrata (fam. Burseraceae) and Ashwagandha are often used alone or in combination in the treatment of chronic, degenerative diseases, like rheumatoid arthritis and osteoarthritis.

An ingredient obtained from Curcuma longa or turmeric (fam. Zingiberaceae) curcumin was evaluated vs. phenylbutazone in a double-blind 2 week study of 18 patients with rheumatoid arthritis . Total daily dose of phenylbutazone was 300 mg and the curcumin 1200 mg, administered in three divided doses. The following clinical parameters were significantly improved as a result of tretament with curcumin or phenylbutazone respectivelly: morning stiffness (minutes) 132.5(baseline value)/124.2/97.2 ($p<0.05$); walking time (sec/25 ft) 15.4/13.8/12.4 ($p<0.05$); fatigue time (h) 3.8/3.9/5.4 ($p<0.05$ only for phenylbutazone); swelling 16.8/12.5/11.2 ($p<0.02$). Grip strength, articular index and the lab data of inflammatory proces i.e. erythrocyte sedimentation rate (ESR) were unchanged. The objective evaluation of treated patients mean score was 3.4 for curcumin ($pp<0.05$), 3.1 for phenylbutazone ($p<0.001$) as compared to the 3.8 baseline value. In conclusion authors of the study found that both curcumin and phenylbutazone showed a comparable antirheumatic acitivity (Deodhar SD et al. Ind J Med Res. April 1980; 71: 638-634). Curcuma longa contains curcuminoids, i.e. curcumin, demethoxy curcumin, bisdemethoxy curcumin.

Boswellia serrata gum (fam. Burseraceae) in form of a standardized extract of boswellic acids was tested in a 4 week double blind, cross-over trial in 30 patients suffering from rheumatoid arthritis. Boswellic acids were administered orally in a dose of 200 mg three times a day, and the control group received a matching placebo containing lactose. The mean arthritic score in the group receiving boswellic acids came down after four weeks from the pretreatment mean value of 238.4 to 94.67 ; the mean ESR value was reduced from 65.93 to 49.2. As a result of substituting boswellic acids with a placebo (cross-over), the arthritic score rose again after four weeks of the regimen from mean value 125.6 to 181.06; the ESR increased from 38.06 to 45.13. Two patients reported a minor skin reaction in the course of treatment with boswellic acids. For the first 10 to 14 days, the patients needed an additional analgesic to alleviate the pain (Annual Report, Regional Research Laboratory, Jammu, India (1987-1988): 1-2).

In a double-blind, cross-over 3 months study the combination of ashwagandha, turmeric, boswellia gum and zinc complex was evaluated in the treatment of rheumatoid arthritis. Twenty patients presenting with rheumatoid arthritis were randomly receiving either two 650 mg capsules of an active formula every eight hours or the matching placebo. Each treatment was given for a period of three months and then after a wash-out period of two weeks the regimens were crossed-over. The 3 months active therapy resulted in significan, as compared to placebo group, decrease in severity of mean pain score 1.06 vs. 2.76 ($p<0.01$);
morning stiffness mean score 17.57 vs. 34.2 ($p<0.01$); Joint mean score 1.93 vs. 4.17 ($p<0.01$); Ritche articular mean index 4.96 vs. 8.86 ($p<0.01$); grip strength mean score (mm Hg) 57.59 vs. 33.07 ($P<0.01$); disability mean score 0.76 vs. 2.13 ($p<0.01$). ESR mean value 20.67 vs. 35.13. The active treatment group had one patient complaining of nausea, one had dermatitis, and four with pain in abdomen, however these side effects did not necessisate discontinuation fo therapy. The active treatment group had three patients and the placebo group had 18 patients who required NSAIDs to alleviate the pain(Kulkarni RR et al. Ind J Pharmacol. 1992;24:98-101).

A compound extracted from Capsicum annum capsaicin was evaluated in a 4 week double-blind study for topical treatment of pain associated with rheumatoid arthritis or osteoarthritis. Topical capsaicin 0.075% or placebo cream was given to 21 patients to be rubbed into a painful spot four times a day. Clinical reevaluation of the condition was done 1, 2 and 4 weeks after the initiation of

the therapy. As compared to the control group capsaicin significantly reduced tenderness ($p<0.02$) and pain ($p<0.02$) associated with
osteoarthritis but not rheumatoid arthritis. A local burning sensation was the only adverse effect noted in the coures of 4 week treatment with topical capsaicin. Because of the burning sensation one patient dropped out from the study after 5 days of the active treatmen. (McCarthy GM, McCarthy DJ. J Rheumatol. 1992;19:604-607). Natural (but not synthetic) capsaicin is recognized by FDA for topical treatment of pain.

The multicomponent anti-inflammatory formula of Tibetan origin TriPrin®, combining herbs and minerals with willow bark or acetylsalicylic acid, was tested for the anti-oxidant effects *in vitro* against acetylsalicylic acid, or aspirin alone, and vitamin C. This study showed that herbal blend of TriPrin has anti-oxidant properties comparable in strength to vitamin C, while aspirin alone did not have anti-oxidant effects (Badmaev, V. unpublished data, 1997).

VI. Metabolic disorders - clinical trials

1. Diabetes

One of the most debilitating chronic disease is diabetes, which name came from the Greek "diabainein" meaning "to pass through". Two main types of diabetes are distinguished in literature, i.e. Type I, also called juvenile diabetes or insulin diabetes, which occurs due to the lack of insulin production by the pancreas; Type II, also known as adult onset or non-insulin dependent diabetes attributed due to loss of the insulin receptors in the body tissues. Diabetes is listed as the leading cause of noncongenital blindness and kidney failure among adults 20 to 70 years of age. Diabetes also leads to accelerated atherosclerosis, which increases risk of heart disease, stroke and peripheral vascular disease (PVD). The latter condition leads to frequent gangreous changes of lower extremities in diabetics, which necessisate surgical amputation.

The extract from the leaves of Gymnema sylvestre or Asclepias germinata (fam. Asclepiadaceae) also named GS4 has been used in controlling hyperglycemia in 27 patients presenting with Type I diabetes (insulin-dependent). GS4 in capsules in a daily dose of 400 mg was administered for up to 30 months along with daily insulin injections. They were compared to 37 controls on insulin therapy alone. The combined therapy, as compared to insulin alone regimen, resulted in a significant reduction in blood glucose, reduction in the insulin dose to nearly half of the initial amount, reduction in levels of glycosylated hemoglobin, glycosylated plasma proteins and reduction of serum lipids (Shanmugasundaram ERB et al. J Ethnopharm. 1990;30:281-294). GS4 contains gymnemic acids standardized for 25 to 75% content in the extract.

The aqueous extract of Momordica charantia (fam.Cucurbitaceae) fruits was evaluated in seven patients with adult onset diabetes in a 7 week open trial. The aqueous extract was obtained as a decoction from 100 gm of the fruit administered once a day to the patients. The blood glucose in the patients prior to the treatment was 422, 236, 380, 280, 380, 450 and 250 mg%. After seven weeks of the treatment the blood glucose was reduced to 97, 99, 118, 120 (4 weeks), 150 (4 weeks), 100 and 115 mg% respectivelly. All patients at the onset of the trial tested positive for the urinary sugar. Starting at 4 week of the treatment all patients tested negative for the urinary sugar. Glycosylated hemoglobin levels, a useful parameter in the management and prognosis of diabetes, were evaluated before and after the treatment. The baseline mean
value of glycosylated hemoglobin was 8.37 mg% and after 7 weeks the mean value significantly decreased to 6.95 mg% ($p<0,01$) (Srivastava Y et al. Phytotherapy Res. 1993;7(4):285-289). A polypeptide structure called polypeptide-P and resembling in its structure bovine insulin was isolated from seeds of the Momordica fruit. This structure may play a role in hypoglycemic properties of Momordica.

2. Treatment of obesity

Ayurvedic medicine considers excessive body weight as a result of many causes. Thus the recommended therapeutic approach includes lifestyle and nutritional modification as well as pharmacological treatment. Weight loss therapy in Ayurveda is seen, not in terms of aesthetics, but as part of the approach to general well-bing. The treatment usually includes tuning the gastrointestinal functions to optimize nutrient digestion and absorption. Improvement in nutrient delivery balances food cravings and increases lean body mass.

The traditional formula containing Commiphora mukul (fam. Burseraceae) gum or gugulipid, and triphala was tested against placebo in a 3 months weight loss study. The placebo and three varieties of the Ayurvedic weight loss formula were randomly assigned to 70 non-dieting patients to be taken three times daily before meals. On average patients receiving placebo lost 5.3 lbs vs. 18, 17.4 and 17.6 lbs of body weight shed in course of 3 months treatment with various proportions of gugulipid and triphala. In addition to weight loss the treated patients benefited from lowering blood cholesterol: 10 mg/dl (placebo), 20 mg/dl, 19 mg/dl and 15 mg/dl in the respective groups receiving active treatments. Few patients on active treatment reported side effects including nausea and mild diarrhea (Paranjpe P et al. Ethnopharmacol. 1990; 29(1): 1-11). Triphala contains gallotanic acids; standardized extract contains 40% gallotanic acids.

An extract from Garcinia gambogia (fam. Clusiaceae) in form of a compound formula containing 400 mg of calcium salt of hydroxycitric acid (Citrin ® in Citrisan ® product) was tested in a double blind weight loss study on 60 patients. The hydroxycitric acid formula or an identical placebo capsules were administered three times daily half an hour before meals. All patients were on a low fat diet of 1200 kcal/ day and were instructed to exercise 3 times per week. The mean weight reduction in the active treatment group was 14.11 lbs, while the patients in placebo group reduced their weight by 8.37 lbs ($p<0.001$).
The near infrared light (NIR) technique for evaluating the body composition determined that 87% of the weight loss in the active treatment group was due to fat loss, while the corresponding figure in the placebo group was 80%. Blood pressure, total blood cholesterol levels and waist hip ratio were statistically significantly reduced as a result of the active treatment ($P<0.001$). The appetite score using the visual analog scale was significantly reduced in the active treatment group as compared to the placebo group ($p<0.001$). Two patients dropped out of the study due to gastrointestinal discomfort, one in the active and one in the placebo group (Thom E. Int J Obesity. May 1996;20(4): abstract).

It should be kept in mind, however, that Ayurveda and related Tibetan medicine offer much more than a “pill”. It provides a sound heath care philosophy. According to this approach none of the techniques devised by man against disease could be as helpful as the man’s own means of fighting the disease. These natural means should be supported, during critical moments, by specific treatments. But, in the first place, the patien should be maintained in good shape by: proper nutrition, good life-habits, proper adjustement to the seasons of the year and awarness by the individual of his/her physical and psychological predispositions. Recognizing usefulness of Ayurveda & Indo-Tibetan materia medica and the health care philosophy is the practical way to improve our contemporary medicine.