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Herbal Treatments Review Of The Literature On Arjuna, Ashwagandha & karela Titled

" Herbal Medicines A Boon For Mankind"

A REVIEW ARTICLE

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Abstract:

One of the most well-liked and useful medicinal herbs in indigenous systems of medicine for the treatment of cardiovascular disorders is Terminalia arjuna, also known as arjuna bark. Based on the observations of ancient physicians & ayurvedic acharyas for ages, its bark decoction is used in the Indian subcontinent for anginal discomfort, hypertension, congestive heart failure

In India, Nepal, China, and Yemen, Withania somnifera , also known as ashwagandha or Indian ginseng, is widely available. Withanolides, alkaloids, and sitoindosides are the main active phytoconstituents found in plant roots, which are traditionally used to treat a variety of neurological problems.

Momordica charantia, or bitter melon, has anti-diabetic and hypoglycemic actions. Diabetes mellitus is one of the most prevalent disorders in both industrialised and developing nations, and the condition is spreading quickly throughout much of the world.

The indigenous people of Asia, South America, India, and East Africa also use its fruit to cure diabetes and other related illnesses.

The most recent information on traditional use and phytochemistry is included in this thorough overview.

Keywords: Terminalia arjuna, cardiovascular diseases, Withania somnifera, withanolides, alkaloids , sitoindosides, neurological disorders , Diabetes mellitus, *Momordica charantia* , anti-diabetic and hypoglycaemic effects.

Introduction

The phrases supplementary and alternative refer to procedures and goods that patients select in addition to or in instead of Western medical treatments. Surprisingly many people in industrialised countries choose procedures and products for which there is few or no evidence of their usefulness or safety. These procedures are collectively referred to as complementary and alternative medicine (CAM) or traditional medicine (TM). The terms CAM and TM are being used more and more interchangeably. [1]

The prevalence of atherosclerosis is rising worldwide[A1], and it has a poor prognosis, a wide range of comorbidities, and a high morbidity and mortality rate. The progression of atherosclerosis is influenced by endothelial cell dysfunction, vascular smooth muscle cell migration and proliferation, foam cell production, and inflammatory cell recruitment. The cardiovascular system also depends heavily on vascular stem cells (VSCs). Key evidence indicated that the primary cause of graft vein stenosis is the concurrent increase in VSMC proliferation and apoptosis, suggesting that inhibiting VSMC proliferation and apoptosis concurrently is an important technique for the treatment of atherosclerotic stenosis. [2]

One of the main risk factors for the emergence of atherosclerosis and other cardiac problems is dyslipidaemia. This denotes a high concentration of lipids, such as total cholesterol and triglycerides (TGs), in the blood (TC). Both hereditary problems and diets heavy in saturated fats and cholesterol cause raised lipid levels around the world, especially among the Indian people. Worldwide, there are significant efforts being done to diagnose cardiovascular disease. Triglycerides (TGs), total cholesterol (TC), high density lipoproteins (HDL), low density lipoproteins (LDL), and very low density lipoproteins are the traditional lipid metrics (VLDL). Thus, it is clear that a number of the various parameters must be regulated at once in order to manage dyslipidemia effectively.

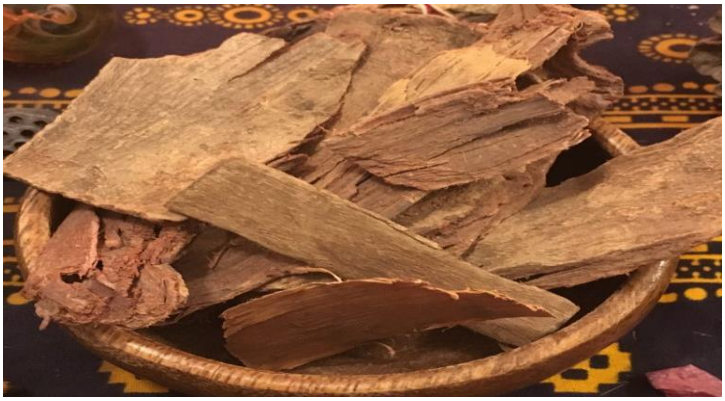
The fact that patients whose cholesterol has been brought to normal levels are nonetheless at risk for CVD adequately demonstrates this.

Numerous medicinal plants utilised in traditional medical systems have demonstrated promise in the therapy of dyslipidemia and CVD without significant side effects. [3]

Herbs and other dietary supplements are used in complementary and alternative medicine as an alternative to conventional western medical care. [4]

The use of medicinal plants and their byproducts is still a significant therapeutic tool for treating human illness. The anti-hyperlipidemic, antioxidant, and anti-atherosclerotic effects of a number of plants with potent medicinal components, such as fibres, phytosterols, saponins, polyphenols, flavonoids, etc., have been examined.

Effectiveness of Arjuna Bark:



Arjuna, or Terminalia arjuna, is a member of the Combretaceae family. Based on the observations of ancient physicians & ayurvedic acharyas for ages, its bark decoction is used in the Indian subcontinent for anginal discomfort, hypertension, congestive heart failure, and dyslipidemia.

In early animal studies, arjuna bark powder or extract was shown to have hypolipidemic and antiatherogenic properties, lowering levels of total cholesterol (TC) and triglycerides (TG). Arjuna fractions were found to prevent the oxidative breakdown of lipids brought on by metal ions in human low density lipoprotein (LDL) and rat liver microsomes in an in vitro assay.

In nonenzymic test setups, these fractions inhibited the creation of superoxide anions and hydroxyl radicals when tested against the production of oxygen free radicals. Arjuna Omelette and Arjuna En Upma, two recipes that use arjuna bark, have demonstrated acceptable acceptability and should be added to the daily diets of those who require long-term intervention for increased cholesterol and oxidative stress levels.

The enhanced hepatic clearance of cholesterol, the down-regulation of lipogenic enzymes, and the inhibition of HMG-CoA reductase are assumed to be the mediators of the hypolipidemic activity.

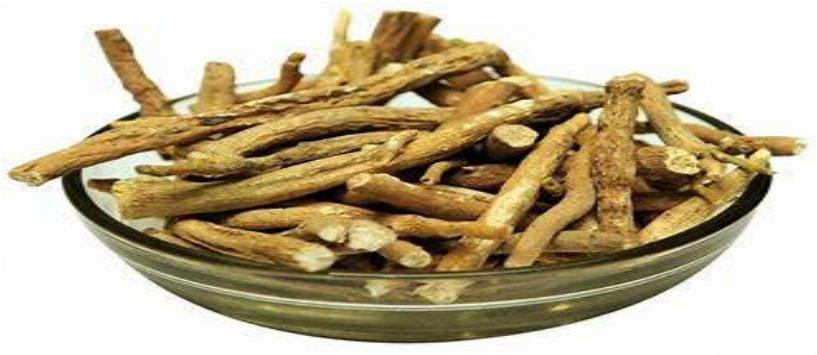
The levels of TC, LDL, and lipid peroxidation were also much lower, according to the scientists. The soluble fibres and sitostanol content were said to have a hypocholesterolemic effect, while the flavonoids were said to have an antioxidant effect. Additionally, it was discovered in a study that taking the bark powder for three months while also taking a statin caused a 15% decrease in TC, an 11% decrease in TG, and a 16% decrease in LDL, with just a slight loss in lipoprotein (a) and nitrite levels.

Arjuna Vati or tablet (500 mg, BD) was given to dyslipidemic patients in a prospective cohort study after arjuna powder (5 g, BD) for 3 weeks. Arjuna's involvement in patients with dyslipidemia was substantiated by the significant decreases in TC, LDL, TG, serum C-reactive protein, blood sugar, and an elevation in HDL level.

Following the treatment of arjuna, a patient with -thalassemia coupled with hyperlipoproteinemia and metabolic syndrome experienced a significant decrease in lipoprotein(a) levels of 24.71%.There have been reports of mild adverse effects include nausea, gastritis, headaches, bodyaches, constipation, and insomnia. Even after more than 24 months of therapy, there have been no reports of haematological, renal, or metabolic damage.[5]

One of the most well-known and useful medicinal plants in indigenous systems of medicine for the treatment of cardiovascular problems is Terminalia arjuna (Roxb.) Wight & Arn. [6]

Ashwagandha, an Ayurvedic Rasayana (Rejuvenator root).



The word "Ashwagandha" indicates , smell or gandh of ashwa that is the horse in Sanskrit. Its root has received its reputation not only for the pungent smell it gives off, but also because it is believed to provide animals strength and vitality.

Although the herb has medicinal qualities in all of its parts, the root extract is the one that is most frequently found in Ashwagandha supplements.

As an adaptogen, Ashwagandha can assist the body in managing stress. It is frequently used to improve mental performance, reduce cortisol levels, and assist control mood swings & is applied to treat a variety of illness conditions. [7]

Ashwagandha root's hypoglycemic, diuretic, and hypocholesterolemic properties were studied in humans. For 30 days, a powder extract was administered to six people with type 2 diabetes and six people who had mild hypercholesterolemia. Blood glucose levels were shown to drop in a manner resembling that of an oral hypoglycemic medication. Significant rises in urine sodium and volume as well as falls in serum triglycerides, low-density lipoproteins, and lipids were also seen. [8]

Karela: The mystical fruit

The herb karela, sometimes referred to as bitter melon or momordica charantia, helps keep blood sugar levels balanced and keeps bodily functions functioning correctly.

Indian cuisine frequently includes karela fruit. Bitter melon is high in iron, has twice as much beta carotene as broccoli, twice as much calcium as spinach, twice as much potassium as bananas, and is a strong source of phosphorus, fibre, and vitamins C and B 1 to 3. At least 32 active components, including beta-sitosterol-d-glucoside, citrulline, GABA, lutein, lycopene, and zeaxanthin, have been found in bitter melon so far. According to nutritional research,

bitter melon also contains significant amounts of potassium, calcium, iron, beta-carotene, and vitamins B1, B2, and C.

The medical benefits of bitter melon, including its ability to treat diabetes, cancer, inflammation, and other diseases, have long been recognised. Numerous phenolic chemicals found in it may have antioxidant and antimutagenic properties. Traditional medicine has utilised bitter melon's fruit, stems, leaves, roots, and fruit to treat conditions like hyperlipidemia, digestive issues, microbial infections, and menstrual irregularities. [9]

The treatment options for non-insulin-dependent diabetic mellitus that are now accessible, including as insulin, dietary changes, and oral hypoglycemics, all have drawbacks. For the treatment of diabetes, many herbal remedies and natural products have been suggested. [10]

The Karela extract is typically used as an alternative as vegetable insulin since it may have anti-inflammatory and anti-diabetic effects. Both animals and people are used to investigate its antidiabetic impact. The entire plant, including the fruit pulp and seed, demonstrated potential antidiabetic function when evaluated in an animal model. Its fruit was discovered to have greater diabetes-related potential effects. It might alter the way that glucose is metabolised or regulate how much insulin is released. [11,12]

Several compounds, including glycoside, charantin, vicine, karavilosides, and polypeptide-p, are present in karela (plant insulin). By increasing glucose absorption and glycogen production in the liver, fat, and muscle cells, these substances may lower blood sugar levels. [13]

Hence , importance of ayurveda and neutraceuticals has gained momentum in recent times owing to its overall benefits to regularise bodily functions & stabilise metabolism.

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References:

1. Haile T. Debas, Ramanan Laxminarayan, and Stephen E. Straus. Complementary and Alternative Medicine. Disease Control Priorities in Developing Countries. Chapter 69. Pg 1281-91.
2. Rui R, Yang H, Liu Y, Zhou Y, Xu X, Li C, Liu S. Effects of Berberine on Atherosclerosis. Front Pharmacol. 2021 Nov 26;12:764175. doi: 10.3389/fphar.2021.764175. PMID: 34899318; PMCID: PMC8661030.

3. An evaluation of pharmacological healing potentialities of *Terminalia Arjuna* against several ailments on experimental rat models with an in-silico approach. Tahsin MR, Sultana A, Mohtasim Khan MS, Jahan I, Mim SR, Tithi TI, Ananta MF, Afrin S, Ali M, Hussain MS, Chowdhury JA, Kabir S, Chowdhury AA, Amran MS, Aktar F.Heliyon. 2021 Oct 20;7(11):e08225. doi: 10.1016/j.heliyon.2021.e08225. eCollection 2021 Nov.PMID: 34816025
4. Upadya H, Prabhu S, Prasad A, Subramanian D, Gupta S, Goel A. A randomized, double blind, placebo controlled, multicenter clinical trial to assess the efficacy and safety of Emblica

officinalis extract in patients with dyslipidemia. BMC Complement Altern Med. 2019 Jan 22;19(1):27. doi: 10.1186/s12906-019-2430-y. PMID: 30670010; PMCID: PMC6341673.
5. Joseph B, Jini D. Antidiabetic effects of Momordica charantia (bitter melon) and its medicinal potency. Asian Pac J Trop Dis. 2013 Apr;3(2):93–102. doi: 10.1016/S2222-1808(13)60052-3. PMCID: PMC4027280.
6. Dwivedi S, Chopra D. Revisiting Terminalia arjuna - An Ancient Cardiovascular Drug. J Tradit Complement Med. 2014 Oct;4(4):224-31. doi: 10.4103/2225-4110.139103. PMID: 25379463; PMCID: PMC4220499.
7. Terminalia arjuna in coronary artery disease: ethnopharmacology, pre-clinical, clinical & safety evaluation.
a. Kapoor D, Vijayvergiya R, Dhawan V.J Ethnopharmacol. 2014 Sep 11;155(2):1029-45. doi: 10.1016/j.jep.2014.06.056. Epub 2014 Jul 8.PMID: 25014508 Review.
8. Narendra Singh, Mohit Bhalla, Prashanti de Jager and Marilena Gilca. An Overview on Ashwagandha: A Rasayana (Rejuvenator) of Ayurveda. Afr J Tradit Complement Altern Med. 2011; 8(5 Suppl): 208–213. 888
9. Krutika J, Swagata Tavhare, Kalpesh Panara, Praveen Kumar A, Nishteswar Karra. Studies of Ashwagandha (Withania somnifera Dunal). International Journal of Pharmaceutical & Biological Archives 2016; 7 (1): 1- 11
10. Baby Joseph and D Jini. Antidiabetic effects of Momordica charantia (bitter melon) and its medicinal potency. Asian Pac J Trop Dis. 2013 Apr; 3(2): 93–102. 999
11. Jung M, Park M, Lee HC, Kang YH, Kang ES, Kim SK. Antidiabetic agents from medicinal plants. Curr Med Chem. 2006;13(10):1203–1218. (PubMed)

12. Upadhyay A, Agrahari P, Singh DK. A review on salient pharmacological features of momordica charantia. Int J Pharmacol. 2015;11(5):405–13. Available at: https://www.researchgate.net/publication/281431310_A_Review_on_Salient_Pharmacological_Features_of_Momordica_charantia

13. Gupta M, Sharma S, Gautam AK, Bhadauria R. Momordica charantia linn. (Karela): Nature's silent healer. Int J Pharm Sci Rev Res. 2011;11(1):32–7. Available at: https://www.researchgate.net/publication/285966662_Momordica_charantia_linn_Karela_Nature's_silent_healer

Bibliography

- Terminalia arjuna in cardiovascular diseases: making the transition from traditional to modern medicine in India. Maulik SK, Katiyar CK.Curr Pharm Biotechnol. 2010 Dec;11(8):855-60. doi: 10.2174/138920110793262051.PMID: 20874682 Review.
- Withania somnifera (L.) Dunal - Modern perspectives of an ancient Rasayana from Ayurveda. Mukherjee PK, Banerjee S, Biswas S, Das B, Kar A, Katiyar CK.J Ethnopharmacol. 2021 Jan 10;264:113157. doi: 10.1016/j.jep.2020.113157. Epub 2020 Aug 9.PMID: 32783987 Review.
- Neurodegenerative diseases and Withania somnifera (L.): An update.
- Dar NJ, MuzamilAhmad.J Ethnopharmacol. 2020 Jun 28;256:112769. doi: 10.1016/j.jep.2020.112769. Epub 2020 Mar 30.PMID: 32240781 Review.
- Traditional Indian medicines used for the management of diabetes mellitus.
- Rizvi SI, Mishra N.J Diabetes Res. 2013;2013:712092. doi: 10.1155/2013/712092. Epub 2013 Jun 5.PMID: 23841105
- Comparative evaluation of hypoglycaemic activity of some Indian medicinal plants in alloxan diabetic rats.Kar A, Choudhary BK, Bandyopadhyay NG.J Ethnopharmacol. 2003 Jan;84(1):105-8. doi: 10.1016/s0378-8741(02)00144-7.PMID: 12499084