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"Development And Formulation Of Herbal Nutraceutical For Athlete"

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Abstract

Athletes often demand high physical endurance and faster recovery, leading to increasing reliance on nutraceuticals. Herbal nutraceuticals, derived from traditional medicinal plants like Ashwagandha, Safed Musli, Shilajit, and Gokshura, provide natural alternatives to synthetic supplements. This study aims to formulate a plant-based nutraceutical to enhance athletic performance, endurance, recovery, and overall health. The selected herbs are known for their adaptogenic, anti-inflammatory, immune-boosting, and stamina-enhancing properties. The formulation was prepared using whey protein as a nutritional base, followed by physicochemical evaluations including amino acid profiling and mineral analysis. The findings support the potential of these herbal combinations in promoting performance and recovery in athletes.

Introduction:-

Nutraceuticals are dietary supplements that combine nutrition and pharmaceutical benefits. With over 80% of athletes using supplements, the shift toward natural alternatives is rising due to side effects linked with synthetic products. Herbal nutraceuticals offer an organic way to boost physical strength, improve recovery, and maintain metabolic and immune functions. Herbs such as Ashwagandha, Safed Musli, Shilajit, and Gokshura are notable for their performance-enhancing bioactive compounds. This study explores their integration into a unified supplement for athletes.

• Attitudes towards Using Sports Supplements Most commonly, the assessment of a sports diet is realized based on food records, which is considered the gold standard for this task, even though its accuracy can be affected by the subjectiveness of the participants . Often, the study participants misreport their food intake by lowering the reported amounts. This misreporting seems to be proportional to the Total Energy Expenditure (TEE). Although there is a vast amount of research on sports supplements and their optimal ratios in the athlete diet, most of the time, in practice, the scientific data are not so precisely applied . illustrates the most frequently recommended nutrient intake deviations in different nutrition assessments related to different sports, according to available data in the literature

Literature Review:-

Several studies validate the efficacy of herbal agents in sports nutrition:

Ashwagandha (Withania somnifera):- Proven to reduce cortisol, boost endurance, and support muscle recovery

Safed Musli (Chlorophytum borivilianum):- Contains saponins with anti-inflammatory and antioxidant properties, improving strength and stamina.

Shilajit:- Rich in fulvic acid and over 80 minerals, supports energy, immunity, and hormonal balance.

Gokshura (Tribulus terrestris):- Enhances endurance, stamina, and testosterone regulation.

These herbal agents are historically recognized and currently being formulated into modern nutraceuticals.

Key Considerations:

Dosage: Always follow the recommended dosage on the label or as advised by a healthcare professional. Quality: Choose high-quality, reputable products to ensure safety and efficacy. Consultation: It's important for athletes to consult with a healthcare provider or sports nutritionist before using any herbal supplements to avoid potential interactions with other medications or health conditions. Incorporating these herbal nutraceuticals into an athlete's regimen can help improve performance and recovery, supporting both short-term and long-term health goals.

Aim and Objectives:-

Aim:

To develop and evaluate a herbal nutraceutical formulation targeting athletic performance, recovery, and health.

Objectives:

Enhance energy and stamina.

Promote post-exercise recovery.

Boost immunity and reduce inflammation.

Support hormonal and metabolic balance.

Provide a safe, natural alternative to synthetic supplements

1.Methodology

2.Ingredient Selection

Herbs were selected based on ethnopharmacological use, scientific validation, and availability.

Formulation Process:-

Drying & Pulverizing: Herbs were cleaned, shade-dried, and ground into fine powder.

Mixing: Herbal powders were blended with whey protein using a tumbling mixer.

Sieving: Final blend was passed through sieve #40 for homogeneity.

Packaging: The final powder was packed in airtight containers.

Evaluation Parameters:-

Amino Acid Profiling: RP-HPLC method for essential amino acid quantification.

Whey Protein Denaturation: Evaluated by solubility using Kjeldahl method.

Ionic Calcium & Mineral Profile: Analyzed using ion-selective electrodes and ICP-MS.

Results:-

The developed formulation displayed promising characteristics:

Balanced amino acid profile, enhancing muscle repair and performance.

High mineral content including calcium, magnesium, and zinc, essential for neuromuscular coordination.

Adaptogenic herbs like Ashwagandha and Shilajit enhanced stress resistance and energy levels.

Anti-inflammatory herbs like Safed Musli and Gokshura promoted faster muscle recovery.

The formulation is likely to meet the metabolic needs of athletes while offering benefits such as reduced fatigue, improved focus, and hormonal balance.

Conclusion:-

The herbal nutraceutical formulation demonstrates significant potential in supporting athletic performance and recovery. The combination of whey protein with traditional herbs provides synergistic effects, supporting both short- and long-term health benefits. Future studies including clinical validation and large-scale trials are recommended to ensure its safety, efficacy, and commercial scalability. The present study serves as a foundation for evidence-based natural supplementation in sports nutrition.

References:-

Khanam Z. et al. (2013) Safed Musli (Chlorophytum borivilianum): A review. J Ethnopharmacol.

Pandey S.C. et al. (2024) Clinical effects of Ashwagandha in athlete performance.

Windmann W. (2021) Shilajit and its role in cognitive and immune functions.

Meena P. (2023) Therapeutic uses of Gokshura in performance enhancement.

Sushruta Samhita, Chaukhambha Orientalia, Varanasi, 2005.

Biswas TK, Auddy RG. (2009) Clinical evaluation of Shilajit in oligospermia. Andrologia.

Uddin, Q., et al. Phytochemical and Pharmacological Profile of Withania somnifera Dunal: A Review. 2012

Maurya, R., Chemistry and Pharmacology of Withania Coagulans: An Ayurvedic Remedy. J Pharm Pharmacol, 2010. 62(2): p. 153–60.

Ihsan ul, H., et al., Biologically Active Withanolides From Withania Coagulans. Journal of Natural Products, 2013. 76(1): p. 22–28.