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Health Benefits Of Moringa Oleifera As A Food Supplement For Sportspersons And The General Population

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Abstract

Herbal supplements are considered as a major healthcare provider around the globe particularly in developing countries like Pakistan. Moringa Oleifera is a superfood plant known as the miracle tree because of its tremendous nutritional content, therapeutic purposes, and medical advantages. The ethical approval of the study was granted by the Institutional Review Board (IRB) of The University of Lahore. The purpose of this research is to determine the mineral content in the leaves of the Moringa Oleifera. The leaf material was submitted for analysis in Laboratory of Plant Science, Quaid-i-Azam University, Islamabad. Minerals were anslyzed through Atomic Absorption Spectroscopy method and calculated zinc 36.81 mg/kg, , calcium 854.01 mg/kg , phosphorus 2633.41 mg/kg, iron 96.33 mg/kg, manganese 2013.51, potassium 1042.21 mg/kg, , and magnesium 3651.8, Sodium 212.65 mg/kg were present in the moringa leaf which are measured mg per kilogram. The results obtained indicate that moringa leaf powder was rich in essential minerals. It was concluded that the Moringa supplement can be used to overcome the deficiency of nutrients, vitamins, and bioactive compounds among males, children, and sportsmen.

Keywords: Moringa Oleifera, supplement, mineral and vitamin.

Introduction

World Health Organization (WHO) stated that 60% of people worldwide and about 80 percent of the population in developing countries, use herbal medicine for their primary health care and nutritional needs (Khan & Ahmad, 2019). Herbal supplements are said to be more efficient, safe, dependable, non-toxic, and inexpensive. In Kenya, 85% of people have tried conventional herbal remedies for a range of ailments (Ozioma & Chinwe, 2019). Herbal medicines are considered a major healthcare provider around the globe particularly in developing countries like Pakistan. Herbal plants are rich sources of curative and safe medicines which are used for treating diseases and fighting infections from ancient times. Traditional herbal therapy has served as a consistent source of medications for different illnesses (Khoshkharam et al., 2022). Plant-based diets are abundant in antioxidants and minerals. African and South African countries use moringa oleifera (MO) a plant from the moringaceae family as a health care supplement to treat a variety of ailments/ diseases. These supplements also enhance overall health conditions (Anwar et al., 2007; Boopathi & Raveendran, 2021). A major species in the kingdom of plants, moringa oleifera is farmed in the

tropical areas of Pakistan, locally known as sohanjna. To treat diabetes, colds coughs, and wounds, moringa leaf is used. A as vital source of nutritional substances, moringa oleifera products are used for common health issues (Abd Rani et al., 2018). Back in 150 B.C. Moringa Oleifera (MO) has been considered a food supplement for improving human health. Indian troops offere moringa oleifera leaves to enhance their stamina release tension and relieve pain during combats.

Nutritional Value of Moringa Oleifera leaves

Moringa oleifera leaves contain vitamin "C", Vitamin "A", Calcium, potassium, and iron several times more than natural fruits, dairy food, and vegetables (Yegambal & Swarnalatha., 2019). Moringa oleifera leaves contain all the required dietary supplements useful for humans and animals. This wonderful nutritional plant is rich in protein, vitamin "C" calcium and other minerals (Khan et al., 2020). Moringa oleifera products are a great source of proteins vitamins and minerals, therefore nutritionists, doctors and community health workers advise the use of moringa oleifera for the treatment of malnutrition (Dhakar et al., 2011).

Moringa oleifera leaves, known as magical food plant, due to their great nutritional values, therapeutic purposes and other medicinal cures. As a significant source of antioxidants. MO provide help in lowering the onset of chronic diseases and also fight against the oxidative stress (Islam et al., 2021). Ayurvedic medicine linked moringa oleifera leaves for cure of 300 diseases/ailments. MO also have positive impact on human blood pressure having low level of polyphenols contents it (Vargas-Sánchez, et al., 2019).

Moringa oleifera leaves is nutritional hub with micronutrients used as food supplements for humans and animals as well. The vitamins found in MO leaves can benefit the immune system and protect the body from harmful radicals. The powder for of MO leaves is a bank of nutrients that fight againt germs and also work as an antiseptic and detergent stuff. The extract of moringa oleifera seeds have polyunsaturated fatty acids, that are helpful in the efficient and smooth running of the body functions. The anitoxidants works in the body as a defense system. Moringa oliefera leaves extract have antioxidants which work to block the irritating reactive oxygen species in free the radicals from causing trouble to the body function (Nova et al., 2020). The polyphenols play important roll in lowering chronic diseases risk. These amalgamas were extensively studied through different fields like, mbiology, chemistry, and medicine (Mihanfar et al., 2021).

To treat high cholesterol, hypertension, insulin resistance, diabetes, cancer and inflammation, a total consumption of total 1 g/day is use, which is more than other phytochemical and well antioxidants (Lin et al., 2018). Moringa Oleifera is a tropical tree with a wide range of applications. Moringa Oleifera leaves have a potential hypotensive effect, hence it's traditionally utilized for circulatory system disorders (Alia et al., 2022). Moringa Oleifera is a medicinal plant having therapeutic properties that will be collected from different areas, especially from northern areas of Pakistan. The authentication of the plant samples will be confirmed by the Taxonomist and Herbarium of the National Agriculture Council, Islamabad Pakistan. All plants will be dried under WHO guidelines, Moringa Oleifera is a remarkable and fantastic plant because of its well-established, reliable, and potentially beneficial nutritional and medicinal properties.

According to the United Nations Food and Agriculture Organization, every twelve people including 160 million children

under the age of five, is malnourished on the planet.

Moringa oleifera and its medical value

Medicinal plants are the major source of medicine in different countries and contain natural compounds that can be used against diseases. Moringa Oleifera is used as a cure for different disorders such as fevers, heart complaints, inflammation, headaches, digestive disorders, asthma, rheumatism, and intestinal complaints (Ravindra, Priya, & Siddheshwar 2019).

Commercial applications of moringa

Moringa Oleifera belongs to the family Moringaceae a softwood tree, native to India, and cultivated in sub- Himalayan regions, of India and Pakistan.The products of moringa oliefera leaves were used for cosmetic purposes in ancient Egypt. MO products were also used for medicinal uses, and therapeutic applications (Zakawa et al., 2020). Moringa Oleifera leaves contains phytochemicals, which might be utilized in the medical and industrial areas for bioactive reasons (Lobo et al., 2010). Moringa Oleifera leaves can be used as a substitute for food supplements to improve population health in many countries (Anwar et al., 2007).

To maintain cardiovascular health, which is essential for endurance athletes, plant-based nutrients are important. A plant-based nutrients has been revealed to reverse atherosclerosis and to enhance blood lipid levels in the plasma, blood pressure, body weight, and blood glucose control (Barnard et al., 2019). These diets affect blood flow, body composition, antioxidant capacity, and glycogen storage. It will also help improve performance and speed up recovery in endurance sports. These characteristics give endurance athletes a scientific justification for consuming more plant-based foods (Mujika et al., 2018).

This study will support and encourage additional focus on food-based approaches to address micronutrient deficiencies. This study will also increase researchers' interest in introducing the potential of herbal items to increase physical effectiveness. However, due to the negative side effects of synthetic pharmaceuticals, herbal medicines, and natural antioxidants may be recommended to coaches and players.

Nowadays, people have become more conscious about their health, fitness, and balanced diet because inorganic diets and allopathic medicines have more side effects than herbal nutrients.

Statement of the World Health Organization (WHO), revealed that 80% of the population in poor nations and 60% of the global population rely entirely on herbal medicine for their primary health care requirements/issues (Khan & Ahmad, 2019). The general population and athletes are facing many health-related problems due to a lack of nutritional supplements.

The current study is very important in the field of sports science because moringa oleifera has high nutritional value, anti-inflammatory properties, and the potential to enhance physical performance. Moringa plants are rich in nutrient profile, particularly in minerals and vitamins which may contribute to improving energy level and well-being. This research aims to explore these aspects of moringa for the development of athletes as well as the general population. The findings of the study added to designing coaching planes and to evaluate the health status as per requirements of the specific events. The outcomes of this study provided knowledge of the body functions in the field of training, fitness, exercise physiology and biochemistry.

Methodology

An experimental study design was used. The study was conducted at the Directorate of sports at Quaid-i-Azam University (QAU) Islamabad, Pakistan. The facility of plant sciences laboratory was available for the analysis of Moringa Oleifera leaf material. The study was registered in ClinicalTrials.gov under the trial number NCT04164771. The ethical approval was granted by the Institutional Review Board (IRB) of The University of Lahore, and the Bio-Ethics Committee (BEC-FBS-QAU2023-535) of Quaid-i-Azam University Islamabad, Pakistan.

Moringa Oleifera fresh leaves were received from the Cheema Greenhouse Bahawalpur Pakistan for minerals analysis study. The plant was identified by a botanist department of plant sciences. The Moringa leaves were washed in a chlorine solution, dried under shade at room temperature, ground into fine powder, and stored at minus 20°C until use. Moringa oleifera leaf material was submitted to the laboratory of Plant Science, while for minerals, Vitamins, and Macronutrients analysis, Moringa Oleifera leaf powder was submitted to the Laboratory of Plant Science, at Quaid-i-Azam University, Islamabad.

Data Analysis

Nutritional Analysis of Moringa Oleifera Leaf

The following are the minerals' contents: calcium 854.01 mg/kg, Sodium 212.65 mg/kg, iron 96.33 mg/kg, phosphorus 2633.41 mg/kg, manganese 2013.51, zinc 36.81 mg/kg, potassium 1042.21 mg/kg, and magnesium 3651.8 were present in the moringa leaf which is measured mg per kilogram.

Table 2: Contents analysis of minerals of Moringa oleifera leaves

Minerals	Calcium mg/kg	Magnesium mg/kg	Sodium mg/kg	Potassium mg/kg	Iron mg/kg	Zinc mg/kg	Manganese mg/kg	Phosphorus mg/kg
Values	854.01	3651.81	212.65	1042.21	96.33	36.81	2013.51	2631.41

Table 2: Contents analysis of vitamins of Moringa Oleifera Leaves

Vitamins	B1	B2	B3	C	E
Values	2.02 ml/100g	21.3 ml/100g	7.6 ml/100g	15.8 ml/100g	10.8 ml/100g

The content of vitamins are as follows: vitamin B1 2.02 ml/100g, Vitamin B2 21.3 ml/100g, Vitamin B3 7.6 ml/100g, Vitamin C 15.8 ml/100g, and Vitamin E 10.8 ml/100g.

Table 3: Macronutrients of Moringa oleifera leaves

Bio-active compounds	Carbohydrates	Fibers	Proteins	Lipids
Values	0.1–43.9 g/100g	0.1–28.5	25.0–30.3	0.1–10.6

	g/100g	g/100g	g/100g

Discussion

Medicinal plants are not only used as ingredients in traditional medicines but also as alternative treatments for different ailments (Kumar et al., 2021). Plant based food supplements have been utilized for medicinal purposes, and to treat a variety of infectious disorders from ancient times (Pandey et al., 2013). Human civilization is proof that people have been looking for food to stay healthy and active (Nsagha et al., 2020). A balanced diet for health purposes and fitness is the most crucial requirement in the modern era for all age groups. It shows that moringa oleifera leaf powder also delivers nutritional elements that are required for health and protection from different diseases. It revealed that Moringa oleifera is a wonderful plant rich in proteins, iron, calcium, and vitamins which are the best source of nutritional profile.

According to reports, dietary supplements and nutritional interventions may offer protection against exercise-induced oxidative stress. However, due to the negative effects of synthetic pharmaceuticals, using herbal remedies and natural antioxidants may be quite helpful, therefore coaches and players may benefit from taking supplements of herbs. Moringa oleifera has many nutritional elements like Minerals, vitamins, and some bio-active compounds which contribute the positive effects on health as well as chronic diseases.

Conclusion

In conclusion, the present analysis indicated that Moringa can be used to overcome the deficiency of nutrients among males, children, and sportsmen. Moringa is very beneficial and people should use Moringa for diet and medicinal purposes because the moringa plant is a good source of various minerals, nutrients, and antioxidants. Moringa Oleifera plant is declared a superfood, a nutritional and medicinal compound which are very helpful in treating anemic conditions, lipid profile, diabetes, and hypertension.

Recommendations

The current study might be seen as a pioneering effort in the field of herbal nutrition and sports sciences. However, because of the study's small sample size, scarce resources, and lack of bio-medical labs, the results should only be regarded as an indicator.

Further preparations need to be conducted under the direction of experts in the domains of sports and herbal medicine to get the desired result. Moreover, additional research is required for a conclusive and trustworthy result.

Moringa is a superfood that has many explored or unexplored nutrients beneficial for the maintenance of a healthy lifestyle. Therefore, health experts and physical educationists can promote the use of moringa oleifera as an alternate food supplement as compared to an expensive supplement available in the market both for general and sportsmen/women.

In the future, new scholars will lead this on a more advanced basis for the development of plant-based supplements in the field of exercise physiology as well as public health. Moreover, the current study will be extended to different areas especially females and children to overcome the anemic conditions.

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