International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 12 Issue 5, May-2025

Development & Evaluation of Antioxidant Drink to Enhance Sports Performance - A Study to Educate Cricketers

Sanjana Bose[1], Dr. Nandita Thakur[2]

[1]Student, DDU-KK, Devi Ahilya Vishwavidyalaya, Indore, Madhya Pradesh , India
[2]Faculty, DDU-KK, DAVV, Devi Ahilya Vishwavidyalaya, Indore, Madhya Pradesh, India

ABSTRACT

This study aims to develop an antioxidant-rich herbal tea to enhance sports performance in cricketers. Antioxidants play an important role in combating free radicals in the body . Hence antioxidants reduce muscle damage, immune dysfunction, stress and fatigue. A special herbal tea product (T1) was developed and compared with a control product (T0). The organoleptic and proximate analysis tests were conducted, and the results showed that T1 was more acceptable and palatable than T0. T1 is also equally nutritious as T0. The experimental herbal tea product demonstrated a better potential source of antioxidants, which contributes in improving focus, mental cognition, stamina, endurance and reduced muscle damage. The outcomessuggestthat the developed herbal tea is a beneficial adjunct to support sports performance in cricketers.

***Keywords*- Antioxidants, Herbal-Tea, Sports-Performance, Improving-Endurance**

INTRODUCTION

Nutrition and sports go hand in hand. An important component of Nutrition is antioxidant which are known for neutralizing free radicles which are highly reactive and destruction of cell, protein and DNA. Hence antioxidants help in maintaining overall health and preventing diseases by stabilizing free radicles, it reduces oxidative stress, it protects against cell damage, supports immune function and reduces inflammation according to studies. Antioxidants can be classified into 5 broad categories according to whether they are enzymatic suchas catalase, glutathione peroxidase, superoxide dismutase and glutathione reductase, superoxide radicles and lipid hyperoxides and non- enzymatic such as Vitamin C & Vitamin E,Beta Carotene and polyphenols like lignan, flavonoids and phenolic acids Additional antioxidants are Coenzyme Q10 and Alpha Lipoic Acid. The other types on the basis of solubility are Water Soluble antioxidants such as Vitamin C and glutathione, lipid soluble such as Vitamin E and β- Carotene . The antioxidant rich diet containing berries such as strawberries , citrus fruits such as oranges and lemons, leafy greens such as spinach, nuts and seeds such as Almonds and sunflower seeds, whole grains such as brown rice and quinoa, olive oil are rich in anthocyanins, Vitamin C, flavonoids, Zeaxanthins, vitamin E, magnesium, selenium, manganese,B vitamins respectively. One such source of antioxidants is Herbal tea, consumed from many centuries across the world is the infusion or decoction of flowers, fruits, roots and leaves of various herbs apart from Tea plant *Camellia sinesis* . This is herbal tea is prepared by combining herbs like Shankhpushpi (*Convolvulus prostratus*), Brahmi (*Bacopa monnieri),*Belpatra (*Aegle marmelos*), Mint*(Mentha spicata),* Fennel(*Foeniculum vulgare),* Clove(*Syzygium aromaticum),* Cardamom(*Elettaria cardamomum)* and Lemongrass(*Cymbopoganfleuosus).*

Importance of herbal tea

Herbal teas are extremely important as they contain antioxidant and polyphenol properties reducing the risk of certain types of cancer and gives protection against cancer cell growth and proliferation .The flavonoids present in herbal teas improves cardiovascular health and supports the immune system. It gives digestive benefits reduces nausea and inflammation of digestive tract . Herbs such as chamomile has shown anxiolytic and antidepressant effects which reduces stress and anxiety

Therefore, herbal tea for fatigue, strengthens cognitive function and enhances stamina along with other benefits as discussed above. This research aims on developing a herbal tea blend to enhance sports performance of cricketers.

RESEARCH METHODOLOGY

The methodology of the research is carried out in two phases the first phase is the collection of ingredients & standardization of recipe and the second phase was development and evaluation of the product.

Collection of Raw Ingredients

The raw ingredients are collected from a local market in Indore, Madhya Pradesh, India. The raw materials are combined together to make the herbal tea blend. The ingredients of the herbal tea are: Brahmi, Shankhpushpi, Bel Patra, Clove, Fennel, Mint, Cardamom and Lemongrass.

Standardization of Recipe

For the standardization of the recipe 6 trials are done and a total of 4 replications are made.

Development of the Product

The herbs are firstly combined with standardized measurements. Then a tablespoon of the mixed powder of herbs is added in water to boil for 15-30 minutes. The infusion water now obtained is cooled at room temperature.

Evaluation of the Product

The prepared product is now evaluated through sensory evaluation where panelists or consumers assess the parameters like color, flavor, taste, texture and overall acceptability of the product. In the proximate nutritional analysis, the macronutrients and the micronutrients are analyzedalong with the moisture and ash content of the developed product.

RESULTS & DISCUSSION

Organoleptic Evaluation Of the Products

Table 4.1 : Mean acceptability Score of Attributes between the developed samples

Parameters	Samples	
	T0	T1
Color	10.84± 3.59	16.54± 3.04
Flavor	9.8± 4.38	17.08± 2.76
Taste	9.66± 4.66	17.06± 3.37
Texture	12.4±4.29	16.58± 3.35
Overall Acceptability	10.2±4.30	17.3± 3.03

The organoleptic evaluation by composite score of developed products presented in table 4.1 . The highest value in the color attributes is from sample T1(16.54± 3.04) followed by T0(10.84± 3.59). The result suggested T1 was most acceptable regarding color than T0.

The flavor parameter depicted that T1(17.08±2.76) is slightly more acceptable than (9.8± 4.38). The samples were determined by Microsoft Excel 10. In the taste parameter T1(17.06± 3.37) scored slightly higher than T0(9.66± 4.66). Therefore, indicating T1 has more acceptability regarding Taste than T0.In texture T1 (16.58± 3.35) has scored higher followed by T0(12.4±4.29) indicating T1 is more acceptable than T0. In overall acceptability T1(17.3±3.03) was more acceptable than T0(10.2±4.30).

Proximate Analysis of the Product

Table 4.2 Mean Acceptability Score Of Attributes Between The Developed Samples

Parameters	Samples	
	T0	T1
Energy	205.7±164.29	122.5±121.97
Protein	4.57±3.14	4.35± 2.35
Fat	4.90±11.08	2.175±4.44
Carbohydrate	32.41±30.76	17.92±20.46
Fiber	10.01±9.76	10.23±10.31
Iron	5.87±4.73	9.0625±4.984
Copper	0.52±0.55	8.478±23.24
Vitamin A	491.87±1261.05	224.875±167.0119
Vitamin C	11.2±14.5	29.025±28.248
Ash	2.7±2.38	2.79±1.90
Moisture	33.35±32.65	61.65±36.35

The proximate analysis of the product is depicted as table 4.2 . Regarding energy, the highest mean value is found in sample T0(205.7±164.29) followed by T1(122.5±121.97) indicating To is higher in energy content. In the protein T0(4.57±3.14) is approximately the same as T1(4.35± 2.35). Regarding the fat T0(4.90±11.08) is higher than T1(2.175±4.44). The carbohydrate content of T0(32.41±30.76) and T1(17.92±20.46) ,here T0 is higher. In the fiber content T0(10.01±9.76) and T1(17.92±20.46), T1 is slightly higher than T0. In iron T1(9.0625±4.984) is higher than T0(5.87±4.73). In copper T1 (8.478±23.24) is higher than T0(0.52±0.55). In Vitamin A T0(491.87±1261.05) is higher than T1(224.875±167.0119). The ash content of T1(2.79±1.90) is slightly higher than T0(2.7±2.38). The moisture content of T1(61.65±36.35) is higher than T0(33.35±32.65). The results indicated that T0 has better macronutrient content while T1 has better micronutrient content.

REFERENCES

[1]. Benson, A. M., Cha, Y., Bueding, E., Heine, H. S., Talalay, P., Cancer Res., 1979, 39, 2971-2977.
[2]. Lobo, V., Patil, A., Phatak, A., Chandra, N., 2010. Free radicals, antioxidants and functional foods: Impact on human health. Pharmacogn. Rev. 4 (8), 118-126.
[3]. Frankel, E.N., Meyer, A.S., 2000. The problems of using one-dimensional methods to evaluate multifunctional food and biological antioxidants. J. Sci. Food Agric. 80 (13), 1925-1941.
[4]. Madhavi, D.L.., Deshpande, S., Salunkh, D.K., 1995. Food antioxidants: Technological: Toxicological and health perspectives. CRC Press.
[5]. Sies, H. (1997). Oxidative stress: oxidants and antioxidants. Experimental Physiology, 82(2), 291-295.
[6]. Trachootham, D., Lu, W., Ogasawara, M. A., Nilsa, R. D., & Huang, P. (2008). Redox regulation of cell survival. Antioxidants & Redox Signaling, 10(8), 1343-1374.
[7]. Perron, N. R., & Brumaghim, J. L. (2009). A review of the antioxidant mechanisms of polyphenol compounds related to iron binding. Cell Biochemistry and Biophysics, 53(2), 75-100.
[8]. Niki, E. (2014). Lipid peroxidation: physiological levels and dual biological effects. Free Radical Biology and Medicine, 66, 626-635.
[9]. Traber, M. G. (2007). Vitamin E regulatory mechanisms. Annual Review of Nutrition, 27, 347-362.

[10]. Blagojević, D., Babić, O., Rašeta, M. et al. Antioxidant activity and phenolic profile in filamentous cyanobacteria: the impact of nitrogen. J Appl Phycol 30, 2337-2346 (2018). https://doi.org/10.1007/s10811-018-1476-4
[11]. Earle M., Earle R., Anderson A. (2007) Food Product Development. Marketing approach. Science and Technology Publishing House, Warsaw.
[12]. Mellveen H. (1994) Product Development and the Consumer: The Reality of Managing Creativity. Nutrition & Food Science No. 6.
[13]. Smith, J. S. (2018). Food science and technology: An introduction. Wiley.
[14]. Meilgaard, M. C., Civille, G. V., & Carr, B. T. (2016). Sensory evaluation techniques. CRC Press.
[15]. National Academy of Sciences. (2019). Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids.