

Therapeutic Efficiency of *Centella Asiatica* Flour Incorporated Fryums

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Abstract: The present study was to formulate the *Centellaasiatica* flour incorporated fryums by incorporation of different level of *Centellaasiatica* flour like 5%, 10% and 15% into fryums. The Organoleptic properties of the formulated fryums like colour, appearance, flavour, crispiness, taste and over all acceptability were evaluated. Among the different incorporation 10% of *Centellaasiatica* flour incorporated fryums were recorded the highest scores for overall acceptability.

Keywords: *Centellaasiatica* flour, *Centella*, *C.asiatica*, Vitamin-C and Triterpenoids

1. Introduction

Centellaasiatica (*C.asiatica*, *Centella*) is a prostrate, faintly aromatic, stoloniferous, perennial, creeper herb, attains height up to 15cm (6 inches). The *Centellaasiatica* belongs to the family Apiaceae or Umbelliferae, and flourishes in wet areas of Malaysia, Indonesia, India, and other parts of Asia including China. Utilization of *Centellaasiatica* (*C.asiatica*) have been known for many years in treating all kind of diseases such as gastrointestinal disease, gastric ulcer, asthma, wound healing and eczema [1].

Centellaasiatica found throughout tropical and subtropical regions of India up to an altitude of 600m. The plant is indigenous to SouthEast Asia, India, and Sri Lanka, parts of China, the Western South Sea Islands, Madagascar, South Africa, South East USA, Mexico, Venezuela, Columbia and Eastern South America[2].

In India and other Far East countries, *C.asiatica* is traditionally used in the form of cover crop in rubber and tea plantations. It is also one of the constituents of summer drink popularly known as thandaayee. Besides, *C.asiatica* is generally eaten as green leafy vegetable in the form of salad and ulam among the Malay and Javanese people[3].

Centella is useful for the antioxidant effect as it offer an effective and safe way of increasing body immune system against free radicals [4] and at the same time keep the oxidative stress in a state of balance. Among the triterpenes isolated from *Centella* plant, asiaticoside is the most abundance and responsible to stimulate antioxidant activity in the early phase of the wound healing process[5]. Asiaticoside has been reported to decrease fibrosis in wounds, thus preventing new scar formation. *C.asiatica* is one of the chief herbs for treating skin problems, to heal wounds, for revitalizing the nerves and brain cells, hence primarily known as a "Brain food" in India[6].

The *C.asiatica* has excellent nutritive value. The total calories in 100 g of *Centella* are 37.0 Kcal. In general, *Centella* contained high concentration of potassium (391 mg) and calcium (171 mg), low in protein (2.0%),

carbohydrate (6.7%) and fat (0.2%). It also contains 87.7% moisture, 1.6% crude fiber, 1.8% ash, (32.0 mg/100 g) phosphorus, (5.6 mg/100 g) iron and (21 mg/100 g) sodium. *Centella* is also rich in vitamin C (48.5 mg/100 g), B1 (0.09 mg/100 g), B2 (0.19 mg/100 g), niacin (0.1 mg/100 g), carotene (2649 µg/100 g) and vitamin A (442 µg/100 g)[7].

They also find out that *C.asiatica* is a good source of antioxidants like ascorbic acid, total and beta carotene and total phenolics[8], also studied the antioxidant contents and antioxidant activity of *Centellaasiatica* cultivated in India. Their results showed that *C.asiatica* had a good antioxidant activity and good source of antioxidant contents. Asiatic acid in *C.asiatica* was found to have anticancer effect on skin cancer. Asiaticosides possesses good wound healing activities because of its stimulative effect on collagen synthesis. It might be useful in cancer chemotherapy as it induces apoptosis and enhances antitumour activity of vincristine in cancer cells.

The use of *C.asiatica* in food and beverages has increased over the years basically due to its health benefits such as antioxidant, as anti-inflammatory, wound healing, memory enhancing property and many others. The potential of *C.asiatica* as an alternative natural antioxidant especially of plant origin and its protection against age-related changes in brain antioxidant defense system, have notably increased in recent years[9]. The *Centella* aqueous extract also demonstrated very promising results in protecting the brain against neurodegenerative disorders such as Parkinson[10]. *Centella* extract had shown positive modulation of cognition function and improvement of self-rated mood after 2 months of taking the extract at 750 mg daily[11].

2. Materials and Methods

Fresh leaves of *Centellaasiatica* were selected for the preparation of the *Centellaasiatica* flour. *C.asiatica* leaves were initially cleaned and washed with water. The stem part was also included for its nutritional constituents and whole leaf with stems were dried in shade. The dried *C.asiatica* leaves were grinded as flour in the processor and

made it cool and incorporated into fryums with different level of incorporation. The products were stored in a hygienic manner. The treatments for preparation of *Centellaasiaticafryums* were as follows;

Treatment Details

- T1 – Rice flour (Control)
- T2 – Rice flour + 5% of *Centellaasiatica* flour
- T3 – Rice flour + 10% of *Centellaasiatica* flour
- T4 – Rice flour + 15% of *Centellaasiatica* flour

The formulated fryums were prepared with specified amount of *C.asiatica* flour as mentioned in above treatments. All the ingredients such as rice flour, oil, green chillies, cumin seeds and salt were used.

Organoleptic evaluation of *Centellaasiatica* flour incorporated fryums were carried out by 10 am among the semi-trained panel judges of thirty numbers including the staff and post-graduate nutrition students, Department of Home science, Mother Teresa Women's University, and Women's Christian College, Chennai. The *Centellaasiatica* flour incorporated fryums were placed for onset evaluation. The specific sensory characteristics of fryums viz., crunchiness, porosity, surface hue, surface adhesiveness with other general characteristics viz., colour, aroma, taste, mouth feel and over all acceptability were evaluated using a rating scale. The mean Scores given by sixty judges were used for statistical analysis.

3. Result and Discussion

The Organoleptic properties of fryums were evaluated visually, palpatory, gustatory, olfactory, and overall acceptability. The statistical analyses of the data were depicted in the Table I. The overall acceptability and 9 point rating scale score was higher for the 10% incorporation of *C.asiatica* flour. The data reveals that there were significant differences at the level of 1% significances among 10%

4. Conclusion

The extensive popularity of fryums from all age groups makes this product, a good option for selection. It improves vitamin-C and Phytochemicals and significant protection for lowered the blood glucose levels to normal in glucose tolerance test. It is effective in the management of mild cognitive impairment and other related age-related problems of elderly people such as improvement of diastolic blood pressure, peripheral neuritis, insomnia and loss of appetite. Asiatic acid in *C.asiatica* was found to have anticancer effect on skin cancer. This formulated fryums is convenience food can surely serve as suitable vehicle for improving nutrient intake without compromising its organoleptic properties. It will indirectly improve the vitamin-C, carotene and Phytochemical intake of its consumers. The product has excellent market potential since it contain low carbohydrate, high protein, high vitamin-C, carotenes and phytochemical, and sufficient amount of vitamin and mineral content. Considering all these beneficial factors the *C.asiatica* flour based other products must be of most concern. New steps must be taken to undergo research

about nutritive value of *Centellaasiatica* plant and its part and to introduce it to all community.

Table 1: Results of Statistical analysis of scores given by panel judges for the vitamin-C and Phytochemicals rich *C.asiatica* leaves incorporated fryums

S.No	Level of incorporation	Mean \pm S.D	t-value	Level of significance
1	Control	75.6 \pm 3.50	3.71	Not significant
2	5%	74.4 \pm 3.38	4.15	Not significant
3	10%	72.3 \pm 3.54	2.02	1%
4	11%	73.9 \pm 6.28	3.55	Not significant

References

- [1] Brinkhaus, B., Lindner, M., Schuppan, D. and Hahn, E. G. 2000. Chemical, pharmacological and clinical profile of the East Asian medical plant *Centellaasiatica*. *Phytomedicine* 7: 427-428.
- [2] Haleagrahara, N. and Ponnusamy, K. 2010. Neuroprotective effect of *Centellaasiatica* extract (CAE) on experimentally induced Parkinsonism in aged Sprague-Dawley rats. *Journal of Toxicology Science* 35: 41-47.
- [3] Jamil SS, Nizami Q, Salam M. *Centellaasiatica* (Linn.): urban oA review. *Natural Product Radiance*, 6(2), 2007, 158-170.
- [4] Noriham A, Babji AS, Aminah A (2004). Determination of antioxidative activities of selected Malaysian plant extracts. *ASEAN. Food. J.* 13: 193-199.
- [5] Rajadurai, M. and Prince, P. S. M. 2006. Preventive effect of naringin on lipid peroxide and antioxidants in isoproterenol-induced cardiotoxicity in Wistar rats: biochemical and histopathological evidence. *Toxicology* 228: 259-268.
- [6] Shukla A., Rasik A. K., Dhawan B.N., Asiaticoside – induced elevation of antioxidant levels in healing wounds. *Phytotherapy Research*, 13: 50-54, (1999).
- [7] Singh, R. H., Narsimhamurthy, K. and Singh G. 2008. Neuronutrient impact of Ayurvedic Rasayana therapy in brain aging. *Biogerontology* 9: 369-374.
- [8] Subathra, M., Shila, S., Devi, M. A. and Panneerselvam, C. 2005. Emerging role of *Centellaasiatica* in improving age-related neurological antioxidant status. *Experimental Gerontology* 40: 707-715
- [9] Subhasree, B, Baskar. R, LaxmiKeerthana. R. Lijina Susan, R and Rajasekaran P. Evaluation of antioxidant potential in selected green leafy vegetables, *Food Chemistry* 2009; 115: 1213–1220.
- [10] Tee, E.S., MohdIdris, N., Mohd Nasir, A. and Khatijah, I. 1997. Nutrient Composition of Malaysian Foods. 4th ed. Malaysian Food Composition Database Programme, p.16. Kuala Lumpur: Institute of Medical Research.
- [11] Wattanathorn, J., Mator, L., Muchimapura, S., Tongun. T., Pasuriwong, O., Piyawatkul, N., Yimtae, K., Sripanidkulchai, B. and Singkhoraard, J. 2008. Positive modulation of cognition and mood in the healthy elderly volunteer following the administration of *Centellaasiatica*. *Journal of Ethnopharmacology* 116: 325-332.

Author Profile



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