International Journal of Food Science and Nutrition
ISSN: 2455-4898
Impact Factor: RJIF 5.14
www.foodsciencejournal.com
Volume 3; Issue 5; September 2018; Page No. 11-12

Effect of value addition of beet root in the processed health powder of anemic patients

Richa Upadhyay[1], Krishna Deepak Tripathi[2], Kritika Upadhyay[3]
[1] Department of Food Science and Nutrition, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh, India
[2] Department of Horticulture, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh, India
[3] Student, Isabella Thoburn College, Lucknow, Uttar Pradesh, India

Abstract
The experiment was carried out in kitchen area of Urusala Horsman Memorial Hospital, Kanpur, Uttar Pradesh, India. Processed value added food was prepared by flour like wheat flour, gram flour, rice flour with incorporation of beetroot. Organoleptic qualities are analyzed by a 9 point hedonic scale and nutritional quantities were checked by A.O.A.C (1980) methods. Results showed that addition of beetroot powder in processed wheat flour powder is fully acceptable. So a drastic change has been seen in iron content in the blood of anemic patient. CRD method was used for comparing the two samples of processed health food value added with beet root.

Keywords: value addition, organoleptic, acceptable, hedonic scale

Introduction
If one have anemia, his blood does not carry enough oxygen to the rest of body. The most common cause of anemia is not having enough iron. Our body needs iron to make hemoglobin. Hemoglobin is an iron-rich protein which provides red color to blood. Hemoglobin carries oxygen from the lungs to the all of the body. Anemia is causes by mainly blood loss, lack of erythrocytes production and high degree of red blood cell destruction. Conditions which causes to anemia include- heavy menstrual flow, pregnancy, ulcers, colon cancer, inherited disorders, blood disorders such as sickle cell anemia and thalassemia or aplastic anemia, a condition that can be inherited or acquired, metabolic disorder. Anemia can weaken our immune system so we feel tired, cold, dizzy, and irritable, short of breath or have a headache. Anemia can be diagnosed with a physical exam and blood tests. Treatment depends on the kind of anemia one have.

Objective
The objectives of the study are
1. To assess the level of hemoglobin before and after intake of beetroot value added health powder among women
2. To find out the significant between the level of hemoglobin and selected demographic variables among anemic women.

Hypothesis
H_1: There will be significant difference between the levels of hemoglobin before and after the intake of beetroot value added health powder
H_2: There will be significant association between the level of hemoglobin and the demographic variables among women

Material and methods
Research approach: Quantitative Approach

Design: Pre experimental research design.

Target population: Girls and women age of 13-35 years who have iron deficiency anemia

Accessible population: Girls and women of age 13-35 in Urusala Horsman Memoirial Hospital, Kanpur, and Uttar Pradesh.

Sampling technique: Non probability Purposive Sampling Techniques

Collection procedure: Hemoglobin test by sahli's method.

Analysis: Descriptive & Inferential Statistics

Criterion measure: Level of Hb in adolescent girls and women ages of 13-35 years.

Main findings: Main study findings include

Findings according to demographic characteristics of the subjects
- Population of girls and women 25(51.5%) were between the age group of 13-35years.
- Population of 24(53.25%) samples' family monthly income were between 1000-10000rs.
- Population of 25 (61%) samples were having problematic menstrual cycle.

- Population of 20(50%) samples were having the time period of menstrual cycle between 4-5 days.
- Population of 34 (85%) samples were healthy.
- Population of 22 (55%) samples were vegetarians.

Findings according to assessment of anemia

The level of anemia, in pre-test 17 (46%) were having mild iron deficiency anemia, 15(41%) were having moderate iron deficiency anemia and 5(51%) were having severe iron deficiency anemia. While in post-test 7(25%) got normal Hemoglobin level, 13(34%) were having mild and 14(42%) were having moderate iron deficiency anemia and 4(10%) were having severe anemia.

Findings according to effect of beetroot powder with value addition of processed health powder

The effect of beetroot powder health product on iron deficiency anemia shows in post-test. Post-test showed the increase level in Hemoglobin with the use of beetroot powder. The fund's-test' value for the level of anemia was 8.609 which was highly significant at $p<0.001$ level.

Findings according to association of level of anemia with demographic variables

Criteria of anemia with their targeted demographic variables such as family monthly income are significant, while others are not significant. So, H_1 hypothesis is accepted.

Conclusion

The major conclusion from this present study is that most of the girls and women had mild, moderate and severe iron deficiency anemia in pre-test. This shows the common need to add the beetroot to processed health powder to reduce the level of iron deficiency anemia. And so it will improve the quality of social, mental and physical wellbeing of women and girls.

References

1. McMahon Nicholas F, Leveritt, Michael D, Pavey Toby G. The Effect of Dietary Nitrate Supplementation on Endurance Exercise Performance in Healthy Adults: A Systematic Review and Meta-Analysis.
2. Pajares MA, Pérez-Sala D. Betaine homocysteine S-methyltransferase: Just a regulator of homocysteine metabolism? Cellular and Molecular Life Sciences. 2006; 63(23):2792-803.
3. ADAM. Inc., ed. Betaine. University of Maryland Medical Center, 2002.
4. Potter K, Hankey GJ, Green DJ, Eikelboom JW, Arnolda, LF. Homocysteine or Renal Impairment: Which is the Real Cardiovascular Risk Factor? Arteriosclerosis, Thrombosis, and Vascular Biology. 2008; 28(6):1158.
5. Frank T, Stintzing FC, Carle R, Bitsch I, Quaas D, Strass G. Urinary pharmacokinetics of betalains following consumption of red beet juice in healthy humans. Pharmacological Research. 2005; 52(4):290.
6. Urine color. Mayo Clinic, Patient Care and Health Information, Mayo Foundation for Medical Education and Research. Retrieved, 2016.
7. Kolb E, Haug M, Janzowski C, Vetter A, Eisenbrand G. Potential nitrosamine formation and its prevention during biological denitrification of red beet juice". Food and Chemical Toxicology. 1997; 35(2):219-24.
8. Con AP. (American Academy of Pediatrics, Committee on Nutrition). Iron balance and requirements in infancy. Pediatrics. 1969; 43:134-142.
9. AAP. Con (American Academy of Pediatrics, Committee on Nutrition) Iron supplementation for infants. Pediatrics. 1976; 58:765-768.
10. AAP. Con (American Academy of Pediatrics, Committee on Nutrition) Nutritional needs of low-birth-weight infants. Pediatrics. 1985; 75:976-986.
11. AAP. Con (American Academy of Pediatrics, Committee on Nutrition). Iron-fortified infant formulas. Pediatrics. 1989; 84:1114-1115.
12. Szaefer H, Krajka-Kuźniak V, Ignatowicz E, Adamska T, Baer-Dubowska W. Evaluation of the effect of beetroot juice on DMBA-induced damage in liver and mammary gland of female Sprague-Dawley rats. Phytother. Res. 2014; 28:55-61.
13. Esatbeyoglu T, Wagner AE, Motafakkerazad R, Nakajima Y, Matsugo S, Rimbach G. Free radical scavenging and antioxidant activity of betanin: Electron spin resonance spectroscopy studies and studies in cultured cells. Food. Chem. Toxicol. 2014; 73:119-126.
14. Satoh T, McKercher SR, Lipton SA. Reprint of: Nrf2/ARE-mediated antioxidant actions of pro-electrophilic drugs. Free Radic. Biol. Med. 2014; 66:45-57. 11.002.
15. Nguyen T, Nioi P, Pickett CB. The Nrf2-antioxidant response element signaling pathway and its activation by oxidative stress. J Biol. Chem. 2009; 284:13291-13295.
16. Krajka-Kuźniak V, Paluszczak J, Szaefer H, Baer-Dubowska W. Betanin, a beetroot component, induces nuclear factor erythroid-2-related factor 2-mediated expression of detoxifying/antioxidant enzymes in human liver cell lines. Br. J Nutr. 2013; 110:2138-2149.
17. Lu X, Wang Y, Zhang Z. Radioprotective activity of betalains from red beets in mice exposed to gamma irradiation. Eur. J Pharmacol. 2009; 615:223-227.