



ORIGINAL ARTICLE

Effect Of Cinnamon On Hemoglobin Level After Menstruation

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ABSTRACT

Objective: This study aims to determine the effect of cinnamon on hemoglobin level after menstruation.

Methods: A case control study, a purposive sample of (60) women from AL-Hindia city; (30) women as a study group and (30) women as a control group. The study group was given cinnamon for 12 days (A maximum of 1.2 tsp. of cinnamon powder per day for 5 days, followed by 2 days of rest and return to take cinnamon for another five days to be safe and without side effects) and hemoglobin test twice before and after cinnamon was given on the first day of the cycle and re-examination on the 12th day. At the same time, the hemoglobin level of control group was also examined in the same period to be compared.

Results: The age group was (15-24) for both groups (56.7%) for the study group and (53.3%) for the control group. The hemoglobin test in the study sample was (Hb 12.0-12.4) where the percentage of the study group was (50%) while the control group (60%). And that there is an increase in the level of hemoglobin after cinnamon was given to the study group where it became (10.55±1.07) (g/dL) after it was (10.36±1.09) (g/dL) before giving cinnamon. Age of study samples was reported a non-significant differences at P>0.05, between the observed frequency's distributions compared with expected at the two groups. In addition to that, hemoglobin level was reported a highly significant different at P<0.01 at the study group compared with the control.

Conclusion: The results of the study showed that cinnamon has an effect on increasing the level of hemoglobin in women when given during the menstrual cycle.

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INTRODUCTION

Cinnamon is food supplements, cosmetics goal is to supplement the diet nutrition such as vitamin and minerals, fiber, fatty acids and amino acids that may be missing in a person's diet or may not be consumed in sufficient quantities. Some countries are considered dietary supplements as food, while it considers other countries as drugs or natural health products. In the United States, the adult population (53-55)% consumes supplements that are more than 50,000 types and the most common are multivitamins¹. These products are not intended to prevent or treat any disease and in some circumstances are dangerous,

according to the U.S. National Institutes of Health. Food supplements may be of value to people who do not consume a balanced diet, the agency said². Cinnamon is an evergreen tropical bark of a dense tree that can rise from ten to forty meters. Growth in Sri Lanka, but also grown in Southeast Asia, South America and West India. Cinnamon peel contains volatile oils in terms of up to 4%³. Cinnamon has a long history of use in traditional medicine, but no evidence indicates it is useful to treat any medical condition⁴. While According to the U.S. The National Library of Medicine says cinnamon can be

used in the treatment of vomiting, the common cold, loss of appetite, muscle spasm, and erectile dysfunction.

The health benefits of cinnamon not only taste good but contain many health benefits such as: control blood sugar, antimicrobial and anticoagulant action, it enhances brain function, it's calcium and fiber protection against heart disease and improve colon health, among other things⁵. Cinnamon can lower blood sugar in people with type 1 or type 2 diabetes, according to UK.1 diabetes. But high-quality research supporting the claim is still rare⁶. Ten grams (about 2 teaspoons) of ground cinnamon contain: Energy: 103.4 kJ (24.7 kcal), Fat: 0.12 g, Carbohydrates: 8.06 g (of which - fibres: 5.31 g, sugars: 0.2 g), Protein: 0.4 g⁷.

The European Food Safety Authority in 2008 considered toxicity of coumarin, known to cause liver and kidney damage in high concentrations and a significant component of cinnamon, and metabolic effect on humans with CYP2A6 polymorphism, and confirmed a maximum recommended tolerable daily intake (TDI) of 0.1 mg of coumarin per kg of body weight. CYP2A6 is a predominantly hepatic enzyme with some expression in specialized extracellular cell types⁸.

Normal range of hemoglobin in women for women, 12.0 to 15.5 grams per deciliter. A low hemoglobin count can be due to blood loss, which can occur because of heavy menstrual bleeding. A low hemoglobin count is generally defined as less than 12 grams per deciliter (120 grams per liter) for women. The low amount of hemoglobin in the blood is a problem that affects many people, technically known as anemia. Hemoglobin is the term used to describe the red blood cells which carry oxygen around the body, and so anemia can result in 'hypoxia' which is a lack of oxygen in the blood⁹.

MATERIALS AND METHODS

A case control study was conducted on the effect of cinnamon on hemoglobin level after menstruation. A purposive sample of 60 women were randomly selected; 30 women as a study group and 30 women as a control group. The study sample was asked about age. Hemoglobin blood was examined for both groups in the first day of menstruation and Cinnamon powder was given to the study group with a maximum of 1.2 tsp./day (6G / 0.2oz) for 5 days, followed by two days of rest and back to take cinnamon for another five days to be safe and without side effects for a continuous period of 12 days starting from the first day of the menstrual cycle without changing the other dietary habits of women but a recommendation to drink juices containing vitamin C as orange juice to help absorb iron in cinnamon and make a period of time between drinking boiled cinnamon and milk for at least 6 hours if she want to drink milk because milk prevents absorption of iron and on the 12th day of cycle the blood hemoglobin was re-examined in the specialized laboratories of both groups to determine its new value. The age groups were divided into three categories of ten-years length, and the results of the hemoglobin examination were also divided into three sections (Hb <12.0), (Hb 12.0-12.4), and (Hb

≥12.5). Statistical data analysis approaches were used in order to analyze and assess the results of the study depended on descriptive data analysis and inferential data analysis.

RESULTS

Table 1 Shows that the highest percentage was for the age group 15-24 year for both groups 56.7% for the study group and 53.3% for the control group.

Table 1. Distribution of the (study and control) samples depending on age

| Group | Age / years | Frequency | % | Cumulative Percent |
|---------|-------------|-----------|-------|--------------------|
| Study | 15-24 | 17 | 56.7 | 56.7 |
| | 25-34 | 8 | 26.7 | 83.3 |
| | 35-44 | 5 | 16.7 | 100.0 |
| Control | 15-24 | 16 | 53.3 | 53.3 |
| | 25-34 | 7 | 23.3 | 76.7 |
| | 35-44 | 7 | 23.3 | 100.0 |
| Total | | 30 | 100.0 | |

Table 2 Shows that the result of the hemoglobin test in the study sample was Hb 12.0 - 12.4 where the percentage of the study group was 50% while the control group 60%.

Table 2. Distribution of the (study and control) samples depending on Hemoglobin level

| Group | Hemoglobin level (g/dL) | Frequency | % | Cumulative Percent |
|---------|-------------------------|-----------|-------|--------------------|
| Study | <12.0 | 11 | 36.7 | 36.7 |
| | 12.0-12.4 | 15 | 50.0 | 86.7 |
| | ≥12.5 | 4 | 13.3 | 100.0 |
| Control | <12.0 | 18 | 30.0 | 30.0 |
| | 12.0-12.4 | 9 | 60.0 | 90.0 |
| | ≥12.5 | 3 | 10.0 | 100.0 |
| Total | | 30 | 100.0 | |

Figure 1 shows that about a third of the study sample (study group and control group) has anemia where it was within Hb <12.0 in 1st day of menstruation.

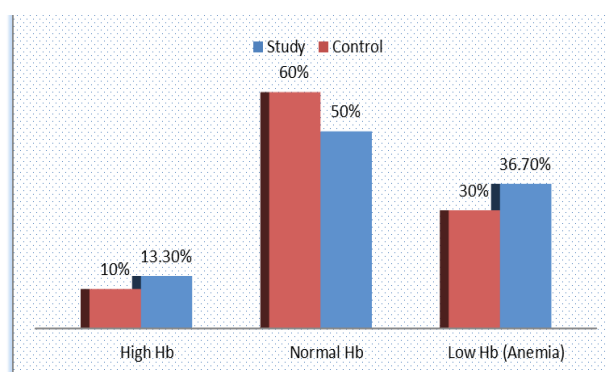


Fig.1 Hemoglobin level (g/dL) of study sample

Table 3 Demonstrates the means of age and hemoglobin levels. The mean of age for study group was 26.33 ± 7.18 years which was lower than the age for control group 26.83 ± 8.64 years. The hemoglobin mean before giving cinnamon in 1st day of menstruation 10.36 ± 1.09 g/dL for study sample, and 10.57 ± 1.05 g/dL for control while the means of hemoglobin level after 11th day of menstruation were 10.55 ± 1.07 g/dL for study sample, and 10.36 ± 1.01 g/dL for control group, and that there is an increase in the level of hemoglobin after cinnamon

was given to the study group where it became 10.55 ± 1.07 g/dL after it was 10.36 ± 1.09 g/dL before giving cinnamon. Age of study samples was reported a non-significant differences at $P > 0.05$, between the observed frequency's distributions compared with expected at the two groups. In addition to that, hemoglobin level was reported a highly significant different at $P < 0.01$ at the study group compared with the control.

Table 3. Descriptive statistics related to age and hemoglobin level with comparisons significant for both groups.

| Samples | Groups | N | Minimum | Maximum | Mean | Std. Deviation | P- value |
|--|---------|----|---------|---------|-------|----------------|----------|
| Age | Study | 30 | 17.00 | 43.00 | 26.33 | 7.18 | .630 |
| | Control | 30 | 15.00 | 44.00 | 26.83 | 8.64 | |
| Hb before giving cinnamon in 1 st day of menstruation | Study | 30 | 9.20 | 12.00 | 10.36 | 1.09 | 0.002 |
| Hb after giving cinnamon in 12 th day of menstruation | | | 9.80 | 12.50 | 10.55 | 1.07 | |
| Hb in 1 st day of menstruation | Control | 30 | 9.00 | 12.00 | 10.57 | 1.05 | 0.000 |
| Hb in 12 th day of menstruation | | | 8.89 | 11.90 | 10.36 | 1.01 | |

Minimum refer the smallest value; Maximum refer to the largest value

DISCUSSION

The convergence in the characteristics of the sample of the study in terms of age groups for both groups achieves homogeneity of the study sample to obtain realistic results that achieve the objective of this study. The level of hemoglobin in about a third of the study sample (study group and control group) has anemia.

Anemia impairs health and well-being in women and increases the risk of negative outcomes for mothers and newborns. Anemia affects half a billion women of reproductive age worldwide. In 2011, 29% (496 million) of non-pregnant women and 38% (32.4 million) of pregnant women aged 15–49 years were anemic¹⁰. The most common cause of anemia worldwide is iron deficiency, resulting from prolonged negative iron balance, caused by inadequate dietary iron intake or absorption, increased needs for iron during pregnancy or growth periods, and increased iron losses as a result of menstruation and helminthic (intestinal worms) infestation. An estimated 50% of anemia in women worldwide is due to iron deficiency¹¹. Iron deficiency is the most common form of malnutrition in the world, affecting more than 2 billion people globally. Iron deficiency anemia is defined as an insufficient of red blood cells due to lack of iron, and although widespread in the least developed countries, it remains a problem in developed countries where other forms of malnutrition have already been eliminated. Iron deficiency is not the only cause of anemia, but where anemia is prevalent, iron deficiency is usually the most common cause¹².

The effect of cinnamon on the level of hemoglobin was reported a highly significant different at $P < 0.01$ at the study group compared with the control (Table 3).

Cinnamon contains 41 milligrams of iron per 5 grams, 1 tbsp equals 7 grams and 1 tsp equals 2 grams. Many seasonings, herbs, and spices have a decent iron content, but it is crucial that you take a look at the size of the

portion you actually eat. Most of us use tiny portions of these seasonings. Consider as well that many foods like these have iron inhibitors. We will not benefit from the entire iron content of the food itself. By and large, we use herbs and spices to add great flavor to food, not so much for the benefit of iron¹³. The difference in the means of hemoglobin for the first and second test of the two groups in Table 3 may be due to the dietary habits of study sample which effect on iron absorption which present in cinnamon or it may be because of the difference in the amount of blood lost during the menstrual cycle between women and others.

The benefits of cinnamon are many and have been proven through such studies. Some research has found that a certain type of cinnamon, cinnamon, may reduce blood sugar in people with diabetes. However, other studies have found no benefit. Studies of cinnamon to lower cholesterol and treat yeast infections in people living with HIV were inconclusive. Laboratory studies have found that cinnamon may reduce inflammation, have antioxidant effects, and fight bacteria. But it is not clear what the effects of people. At the moment, studies have been mixed, and it is not clear what role cinnamon can play in improving health¹⁴. Two years later, a randomized study in the United States showed that cinnamon was able to improve HbA1c levels in patients with type 2 diabetes¹⁵. In 2010, a study in the UK showed similar results showing that cinnamon was able to lower the level of HbA1c in type 2 diabetes¹⁶. However, some studies have revealed that cinnamon has no effect in improving blood sugar control¹⁷.

Another study about cinnamon in the diet for people who are overweight or obese will reduce oxidation and impair fasting glycemia which are risk factors associated with diabetes and cardiovascular disease. The mechanisms behind the beneficial effects may be related to the effects of insulin potentiating and antioxidants of

cinnamon polyphenols resulting in reduced free radical production¹⁸.

CONCLUSION

The results of this study showed that cinnamon has an effect on raising the level of iron and thus increasing hemoglobin in the sample of the study when given during the period of the menstrual cycle.

REFERENCES

1. Gahche J., Bailey R., Burt V., Hughes J., Yetley E., Dwyer J., Picciano M.F., McDowell M., and Semplos C. "Dietary Supplement Use Among U.S. Adults Has Increased Since NHANES III (1988–1994)." NCHS. 2011, (61):1-8.
2. National Institute of Health. "Dietary Supplements: What you need to know". 2011. https://ods.od.nih.gov/pubs/DS_WhatYouNeedToKnow.pdf
3. Wikipedia, the free encyclopedia. "Cinnamon", Reviewed: July 01, 2016 Wikipedia Arabic page.
4. National Center for Complementary and Alternative Medicine (NCCIH). Created: October 2011. Updated: April 2012 Herbs at a Glance: Cinnamon NCCIH Publication No.: 463.
5. Mateljan G. "Cinnamon, ground", 15 Aug. 2005, The World's Healthiest Foods.
6. Khan A., Safdar M., Ali Khan M.M., Khattak K.N., Anderson R.A. "Cinnamon improves glucose and lipids of people with type 2 diabetes". Diabetes Care. 2003, 26(12):3215-3218.
7. "USDA nutritional information for ground cinnamon", Retrieved November 8, 2014. United States Department of Agriculture.
8. Aguilar F., Autrup H.N. and Barlow S."Coumarin in flavourings1 and other food ingredients with flavouring properties Scientific Opinion of the Panel on Food Additives, Flavourings, Processing Aids and Materials in Contact with Food (AFC)". The EFSA Journal. 2008, 793:1-15.
9. Mayo Foundation for Medical Education and Research, low hemoglobin count: Symptoms, May 08, 2015.
10. Organization WH . Global Nutrition Targets 2025: Anemia policy brief, 2014, World Health Organization.
11. Stevens G., Finucane M., De-Regil L., Paciorek C., Flaxman S. and Branca F. "Nutrition Impact Model Study Group (Anemia). Global, regional, and national trends in hemoglobin concentration and prevalence of total and severe anemia in children and pregnant and non-pregnant women for 1995–2011: a systematic analysis of population-representative data". Lancet Glob Health. 2013, 1(1):e16-e25.
12. Rebecca J.S. and Michele L.D. "Guidelines for the Use of Iron Supplements to Prevent and Treat Iron Deficiency Anemia". International Nutritional Anemia Consultative Group (INACG). 1998, 8-46.
13. Amanda R. "Iron Content of Cinnamon, Ground, Daily iron site". Organic Gardening Magazine, 2017, The Cornucopia Institute.
14. Longe J."The Gale Encyclopedia of Alternative Medicine, Natural Standard Patient Monograph:vCinnamon". Second edition, 2005.
15. Blevins S.M., Leyva M.J., Brown J., Wright J., Scofield R.H. and Aston C.E. "Effect of cinnamon on glucose and lipid levels in non-insulin-dependent type 2 diabetes". Diabetes Care. 2007, 30(9): 2236–2237. DOI:10.2337/dc07-0098 .
16. Crawford P. "Effectiveness of cinnamon for lowering hemoglobin A1C in patients with type 2 diabetes: a randomized, controlled trial". J Am. Board Fam. Med. 2009, 22(5):507–512. doi: 10.3122/jabfm.2009.05.080093.
17. Akilen R., Tsiami A., Devendra D. and Robinson N. "Glycated hemoglobin and blood pressure-lowering effect of cinnamon in multi-ethnic type 2 diabetic patients in the UK: a randomized, placebo-controlled, double-blind clinical trial". Diabet Med. 2010, 27: 1159-1167.
18. Roussel A.M., Hininger I., Benaraba R., Ziegenfuss T.N. and Anderson R.A. "Antioxidant effects of a cinnamon extract in people with impaired fasting glucose that are overweight or obese". J Am. Coll. Nutr. 2009, 28(1):16–21.