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Mini Review

Beetroot Juice Imitating Lower Gastrointestinal Bleeding and Painless Hematuria

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Abstract

Exposure to high consumption of beetroot juice led to the red colored stool and urine of patients. This led to the misdiagnosis of patients presenting with hematuria and hematochezia in the hospital setting which leads to significant amount of time and money invested and wrong triage of patients considered as serious by the hospital staff. Current hospital strategies needs to be aware of these clinical cases in order to curb against the anxiety caused by consumption of beetroot juice. In this article we are focused on anticipating in advance regarding the consumption of beetroot through a detailed history of patients before thinking of other differentials and proceeding with upper endoscopy or colonoscopy. Flexible sigmoidoscopy can be done in advance to rule out any severe disease diagnosis or lower gastrointestinal bleeding before proceeding to colonoscopy. Further studies needs to be conducted and more clinical trials needs to be done and also supporting data to make a thorough diagnosis of these patients in the future coming to an emergency unit.

Keywords: Hematuria; Hematochezia; Strategies; Beetroot Juice

Introduction

Beetroot juice contains a red pigment (Betalaine) commonly seen in around 14% of the population. In one of the study this pigment was decolourized by hydrochloric acid, ferric ions and then colonic bacteria preparations was added after which betalaine was then known to be absorbed into the colon [1].

In other studies performed in urine samples of humans, it was observed that after separation done by reverse phase HPLC by Shimadzu high speed LC, betacyanin compounds were identified in the urine sample taken and in the same study when stool samples were taken then using the technique of UHPLC method and after quantification, same betacyanins were observed in the sample. These results showed variability based on time dependent and inter individual data which showed decreased rate of intestinal absorption as well as systemic absorption following a first order kinetics [2].

Beetroot juice effect on Hematological parameters

In one of the study done on mice, Beetroot juice was given (10 ml) in drinking water (40 ml) and then results were obtained which showed that consumption of the same was associated with decreased erythrocytes and slightly decreased hemoglobin and hematocrit which is due to an iron absorption disorder. These changes were observed after long consumption of the juice when toxic substances were build up in the body. Increase in liver volume along with changes seen on histology include acidophilic hepatocytes, bile duct dilation and deep hyperemia [3].

Anaphylaxis associated with beetroot juice is also seen in few patients presenting with urticaria, nausea, cramping, abdominal cramps and diarrhea. Betanin in the juice is associated with facial warmth and flushing and increased bowel permeability due to some allergen present in beet but the intradermal test with beetroot extract was found to be negative [4].

Metabolism of betalains

Experiment done to evaluate the bioavailability and absorption of betalains present in beetroot was observed based on source of food, degradation by bacteria present in the gut, molecular instability in the digestive tract and absorption mechanism. Around 2.7% of the unmetabolised component of the pigment was seen in the

defecation and urine and postabsorptive dissemination of betalain seen in different compartments of the body, including erythrocytes. This similar effect can also be observed with *B. vulgaris* and the process is known as beeturia where the color betanin. This is misdiagnosed as hematuria and hematochezia in various hospital settings due to an autosomal recessive gene seen in around 14% of the population. This is also commonly seen in patients presenting with an iron deficiency anemia [5].

Conclusion

The consumption of beetroot juice for various health benefits offered is beneficial for short term usage of the same but long term usage of the same contains high organic nitrate levels that are converted into nitric oxide by the body and slows down the growth of the acid- producing bacteria found in plaque and cause tooth decay and also imitate lower gastrointestinal bleeding and future clinical trials needs to be done in order to save time and money of patients in the future coming to the emergency department of all hospitals. The limitations of this study include patients with iron deficiency or excess such as in Hemochromatosis or with iron metabolism are more likely to experience the process of beeturia where beetroot is not absorbed.

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