Nutrition & Food Science
International Journal
ISSN 2474-767X

Juniper Publishers
key to the Researchers

Mini Review
Volume 10 Issue 4 - March 2021
DOI: 10.19080/NFSIJ.2021.10.555794

Nutri Food Sci Int J

Non-Centrifugal Cane Sugar is a Potential Functional Food?

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Submission: February 27, 2021; **Published:** March 16, 2021

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Abstract

Non-centrifugal sugar (NCS) is a traditional sweetener consumed worldwide. Previous investigations have reported that NCS is an important source of nutritional and bioactive compounds. The results show that NCS is of great scientific and nutritional and technological interest due to its potential beneficial effects on health. However, better characterization is required to recognize NCS as a functional food.

Keywords: Sugar cane; Antioxidants compounds; Functional food; Amino acids; Complex sugars

Introduction

Nutraceuticals and functional foods have broad potential for preventing the mechanisms of viral infection and modulating immune responses [1], for this reason, in the last decade this topic has been widely studied. Non-centrifugal sugar (NCS) is a traditional sweetener consumed worldwide Flórez-Martínez et al. [2] that contains abundant amounts of sucrose and potentially relevant components like phenolic compounds, amino acids, complex sugars and other compounds that make it different from refined sugar [3]. Interest in the constituents of sugarcane and its products has been rekindled by the recognition that sugarcane juice and some of its products, particularly un-refined sugars, less-refined sugars, and molasses, have antioxidant capacities. Previous authors have reported that NCS is an important source of nutritional and bioactive components [4-8]. The aim of this review to provide a comprehensive overview of beneficial reports of NCS properties from antioxidants compounds and other potentially relevant components.

Methodology

Relevant studies published in scientific journals were analyzed. The search was done in the Scopus database using a structural equation with keywords. Keywords related to minerals, vitamins, antioxidants, and other potentially relevant components and their effect on health were used in this search.

Health Effects of NCS

NCS can be considered as a potential bioactive product. The cane plant itself supplies primarily low molecular weight plant pigments (flavonoids, chlorophylls, carotenes, xanthophylls and phenolic compounds [5]. Previous research [8-11] have demonstrated the antioxidant activity of NCS. Furthermore, Asikin et al. [9] reported policosanol content in NCS, which may have beneficial effects on human health. Different in vitro studies have reported the effect of the antioxidant activity of NCS. Harish Nayaka et al. [7] showed that NCS has a 97% protection against the oxidation of NIH 373 cells. Salazar et al. [12], demonstrated the neuroprotective and antioxidant effects of NCS. Cuellar et al. [13] studied the potential regenerative effects of NCS in a 2D Skin wound Model. In addition, the effect on diseases such as the decrease in the proliferation of tumor cells in leukemia, stomach, lung, colon, and bladder cancer has been demonstrated [14]. An antitoxic and cytoprotective effect has also been demonstrated. Of the studies reviewed, only two articles report the beneficial effects of NCS in human trials [14]. Jaffe [14] showcased the state-of-the-art research reporting the health benefits associated with NCS consumption. The reported benefits include immunological effects, as well as cytoprotective, antitoxic and anticariogenic effects. Also, he found that NCS has the ability to scavenge free radicals, reduce iron complex, and inhibit lipid peroxidation.

Conclusion and Future Prospect

NCS is of great scientific, nutritional and technological interest due to its potential beneficial effects on health, but a better characterization is required. In addition, this antioxidant and healthy product could have a more relevant position as a key nutritional component in a wide variety of foods. In this way, the recognition of NCS as a promising functional food would be promoted, and it would be hoped that research efforts would be increased to extend its use.

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DOI: 10.19080/NFSIJ.2021.10.555794

How to cite this article: Jader R C, María H C. Non-Centrifugal Cane Sugar is a Potential Functional Food?. Nutri Food Sci Int J. 2021. 10(4): 555793. DOI: 10.19080/NFSIJ.2021.10.555794