

Enhanced Antihyperglycemic Activity of Java Tea (*Orthosiphon aristatus*)-Based Functional Drink Using Nanoencapsulation.

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Abstract

Java Tea-based functional drink has been formulated and reported having bioactive compounds. Nanoencapsulation technology may offer protection toward bioactive compounds as well as enhance the bioavailability. The objective of this study was to investigate the possibility of nanoencapsulation to improve the bioavailability of the Java Tea-based functional drink. Antihyperglycemic activity of mono and double dose nanoencapsulated beverages have been determined in streptozotocin induced diabetic rat, comparing to the ready to drink and microencapsulated beverages. After 2 weeks of oral administration of the three types of beverage, it showed that nanoencapsulated beverage has been able to restore the loss of body weight caused by STZ treatment significantly, and increase the feed intake weekly. Blood glucose level in diabetic rats treated with nanoencapsulated beverage could reduce by 18.68 %, higher than microencapsulated (17.60 %) and ready to drink beverage (5.55 %), respectively. Furthermore, nanoencapsulated beverage treatment has significantly minimized and improved the alteration associated with pancreatic rat diabetes and enhanced the expression of b-cells in the islets of Langerhans. Double dose of nanoencapsulated beverage hasn't given better effect than the single dose. Findings from this study might lend support to the use of Java Tea-based functional drink nanoencapsulated as a novel functional food for the prevention of diabetes.

Keywords: Antihyperglycemic, bioavailability, functional drink, Java Tea, nanoencapsulation