



Assessment of Anti-oxidant and Anti-inflammatory activity on aqueous solution of Acai berry extract

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ABSTRACT

Aim: To evaluate the antioxidant and anti-inflammatory activity an aqueous solution of acai berry extract.

Methods: An invitro study of extracted aqueous solution of acai berry from 100 ml of distilled water with 1 gm of acai berry powder. After which aqueous solution is subjected to 5 different concentrations. To check anti-inflammatory and anti-oxidant activity DPPH assay and albumin denaturation assay were used.

Result: After 24 hours spectrophotometry reading of anti-inflammatory activity at 50 µl has 75% and anti-oxidant shows that 50 µl has 90 .3%.

Conclusion: We conclude that aqueous solution of acai berry proved to have good antioxidant and anti-inflammatory activity. In future this extract can be used as topical therapeutic herbal formulation in management of oral potentially malignant disorders.

Keywords: acai berry, anti-oxidant, anti-inflammatory, super fruit, *Euterpe oleracea*

INTRODUCTION

The term "acai palm" is frequently used to refer to the unique species of palm tree known as *Euterpe oleracea* Martius. This fruit is indigenous to South America and is most commonly found in Brazil, Colombia, and the floodplains of the Amazon. When this palm tree reaches maturity, it produces a delicious, 10- to 12-mm-diameter tiny purple-black berry. The pulp of this fruit, which is mostly eaten as food, has an odd flavour resembling raspberry with a

nutty taste. Brazilians used acai berries as their staple food in the 18th century. Brazilians use acai berry as their medical plant for treating different acute and chronic diseases like fever, ulcers and diarrhoea [1][5]. Traditional medicine has long employed EO. Its empirical application against diarrhoea was described by Plotkin and Balick . A study on "EO leaf and steam extracts" only reported a decrease in abdominal contortions and peripheral analgesic activity in 2002, and in 2004 and 2005 the antioxidant capacity of EO

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leaf and stem extracts was examined. Acai has been shown to contain a variety of phytochemicals, the majority of which are “flavonoids (31%), followed by phenolic acids (23%), lignoids (11%), and anthocyanins (9%)”. “Fatty acids, quinones, terpenes, and norisoprenoids” are among the other classes. Among all superfruits, acai has a variety of phytochemicals with antioxidant characteristics, including “anthocyanins, flavanones, flavanonols, flavone-C-glycosides, flavones, dehydroflavonols, flavanols, phenolic acids, and procyanidins” [5]. Several biological activities of this species have been linked to pharmaceutical applications in investigations. The superfood was named after scientists as they are packed with high levels of antioxidants, acai berry prevents free radical oxidation and destruction of cells, by reducing oxidative stress. Acai berry contains high dietary fibres about 44%, oleic acid, linoleic acid palmitic acid, and anthocyanins. Acai berry extracts are used in cosmetic companies as anti-ageing creams and herbal oils. Due to their high fibre content, acai extract is used to decrease the appetite and reduce cravings, which potential weight loss regimen. Regarding biological activity, acai berry has anti-inflammatory and antioxidant properties which can be used in premalignant inflammatory disorders. High oleic acid and linoleic acid which are known as omega oils help in reducing high-density cholesterol. Anthocyanins are also observed to have anti-carcinogenic properties. Studies have soon acai has soon results in inflammatory neurological disorders [2][3]. EO is currently drawing more attention due to its widespread use in the cosmetics and food industries as well as its promise in the medicinal industry. Many components of EO, including fruits, leaves, roots, and fruit oil, have been examined for pharmaceutical applications, suggesting a variety of biological actions based on their chemical makeup [2]. Potential benefits and health effects should be better understood by scientists as there are very in vivo studies.

MATERIALS AND METHODS

Anti-oxidant activity

The antioxidant efficiency of biologically produced zinc oxide nanoparticles was examined using the DPPH assay. Diverse concentrations of acai berry extract are incubated for 30 minutes at five distinct concentrations of "10 ml, 20 ml, 30 ml, 40 ml, 50 ml" in a solution containing 1 ml of

0.1 mm DPPH assay in methanol and 450 ml of 50 mm tris HCL buffer (pH 7.4). Later, the quality of the DPPH free radicals was evaluated based on absorbance at 514 nm. The standard was ascorbic acid. The percentage of inhibition was determined from the following equation,

$$\% \text{ inhibition} = \frac{\text{Absorbance of control} - \text{Absorbance of acai berry}}{\text{Absorbance of control}} \times 100$$

Anti-inflammatory activity

Following the conversion suggested by Muzushima and Kabayashi with particular modifications, the anti-inflammatory effect of acai fruit extract was examined. A modest minute was used to adjust the pH of the liquid to 6.3 before it was heated at 55°C in a water bath for 30 minutes. 0.05 mL of acai of varying fixation ("10 mL, 20 mL, 30 mL, 40 mL, 50 mL") was added. After the samples had been cooled, the absorbance at 660 nm was calculated spectrophotometrically. Standardisation was done using diclofenac sodium. DMSO is utilised as a control.

Percentage of protein denaturation was determined utilising following equation,

$$\% \text{ inhibition} = \frac{\text{Absorbance of control} - \text{Absorbance of acai berry extract}}{\text{Absorbance of the control}} \times 100$$

RESULTS AND DISCUSSION

The results of this study has shown that aqueous solution acai berry extract has a better anti-inflammatory and antioxidant activity . The spectrophotometry reading of anti-oxidant assay shows 10 µl,20 µl,30 µl,40 µl,50 µl acai berry extract in a test tube containing DSSP assay , which at 50 µl acai berry extract the zone of inhibition 90.3% (figure 1) and the Spectrophotometry reading of anti-inflammatory assay shows that 10 µl,20 µl,30 µl,40 µl,50 µl acai berry extract in the test tube with bovine albumin assay , which at 50µl acai berry extract shows 73.6 % (figure 2). Acai are rich in vitamin A,B1,B2,B3,C,E and Vitamin K, it contains more copper,iron,magnesium,potassium and manganese for optical health. Acai berry is rich source of anti-oxidant , anti-inflammatory, with several benefits such as relieves stress, protect cell from damage ,reduce swelling , lower blood

sugar levels, and stimulate the immune systems. Studies have proven that acai berry has anti-inflammatory properties against intestinal inflammatory diseases. Studies also show that acai berry extract can act against osteoclastic differentiation, which helps in preventing bone loss. Few studies have also mentioned the effects of acai on neuro-inflammatory diseases like Parkinson's disease. Acai berry has been less utilized for oral inflammatory diseases. Oral potentially malignant diseases like oral submucous fibrosis and leukoplakia. Antioxidant is the most common first-line therapeutic treatment of OSMF, as the role of oxidative stress is one of the known etiologies in the pathogenesis of oral submucous fibrosis. Acai berry, which is rich in antioxidant and potential anti-inflammatory

agents, can be effective against oral potentially malignant diseases. As antioxidants reduce excessive reactive oxygen species (ROS) formation, which can lead to cell damage by oxidation of cellular molecules. Acai berry, a super fruit, has both anti-oxidant and anti-inflammatory and anti-carcinogenic properties, which can be a novel management in pre-malignant diseases.

CONCLUSION

We conclude that the aqueous extract of acai berry has proven to have both anti-inflammatory and anti-oxidant properties. In the future, this extract can be used as a topical therapeutic herbal formulation in the management of oral pre-malignant diseases.

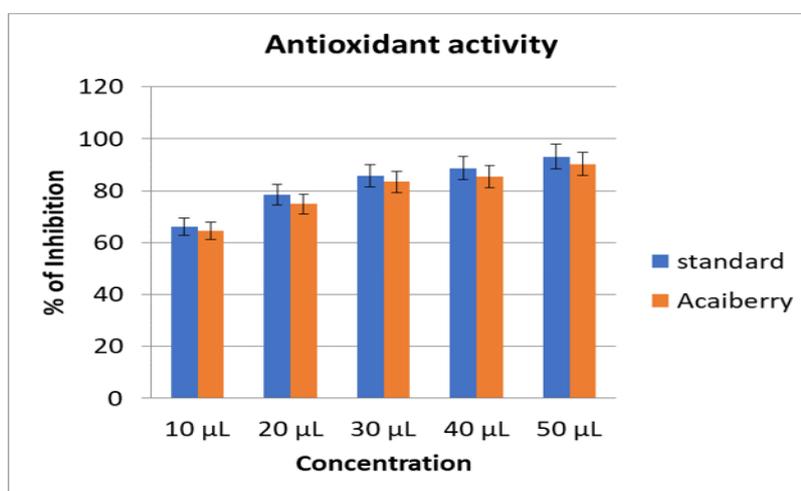


FIG 1: depicts antioxidant properties of acai berry against standard ascorbic acid.

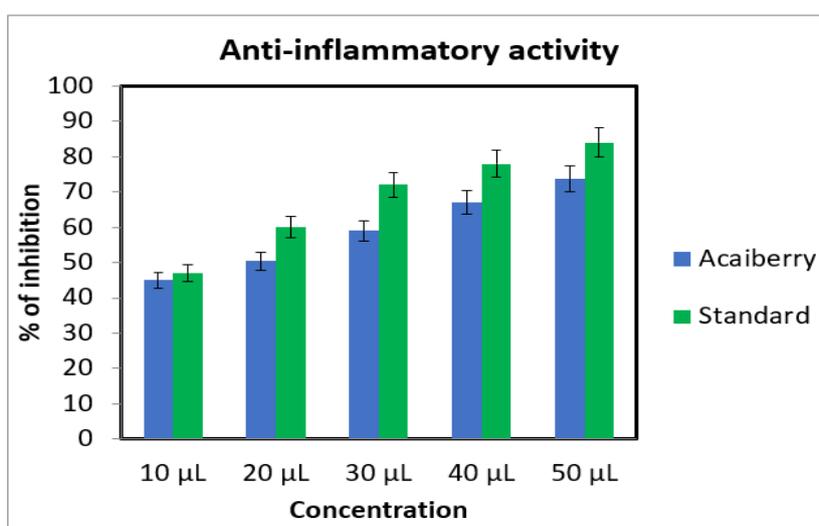


FIG 2: depicts anti-inflammatory properties of acai berry against standard diclofenac sodium.

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