

## Effect of Açai (*Euterpe Oleracea*) Intake on Vascular Function and Lipid Profile: What is the Recommendation?

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### Introduction

The açai palm tree (*Euterpe oleracea* Mart.) is mostly native to Brazil, and its fruit, açai berry, is very popular among physically active individuals. The açai berry pulp, very pleasing to the taste buds, has gained adepts in Brazil, Europe and USA in recent years, being even considered a “superfruit”.<sup>1</sup>

The açai berry pulp is rich in anthocyanins, which is reflected on its deep purple color, in addition to other bioactive substances, such as phenolic compounds and flavonoids. Because of its content of such substances, the açai fruit has been claimed to have a significant pharmacodynamic effect, mainly on the cardiovascular physiology, affecting dyslipidemia and arterial hypertension.

Thus, considering the pharmacodynamic substances and nutritional composition of the açai berry, understanding the impact of its intake on the lipid profile and blood pressure is necessary.

### Development

#### Nutrition facts

The pulp of the Brazilian açai has a considerable amount of fats and dietary fibers. When compared to popularly consumed foods, whose cardiovascular benefits have been well established, vitamin E is the nutrient of açai that stands out. The amount of carbohydrates in the açai pulp alone, without syrup or any dietary item added, is low (Table 1).

### Keywords

Euterpe; Hypertension; Phytochemicals; Lipids; Cholesterol, HDL; Flavonoids.

The lipid composition of the Brazilian açai berry is as follows: polyunsaturated fatty acids, 11.1%; monounsaturated fatty acids, 60.2%; and saturated fatty acids, 28.7%.<sup>3</sup> Of the monounsaturated fatty acids of the açai berry, 53.9% are oleic acid,<sup>3</sup> a substance found in avocado and olive oil and that can improve the lipid profile.<sup>4</sup>

#### Bioactive substances of cardiovascular importance

A significant amount of anthocyanins is present in the açai berry, which also contains other antioxidant phytochemicals important to the cardiovascular system, such as sterols, mainly beta-sitosterol,<sup>3</sup> which, similarly to monounsaturated fats, is also found in olive oil and avocado.<sup>4</sup> Beta-sitosterol acts mainly on lipid modulation,<sup>4</sup> while anthocyanins act mainly by reducing blood pressure.<sup>5</sup>

#### Impact of açai intake on vascular function

The most important effect of the açai berry on vascular function is vasodilation, mainly via the anthocyanins. An easily accessible clinical parameter to monitor the açai effect on vascular function is blood pressure. Despite the expectations, Aqurashi et al.,<sup>6</sup> and Udani et al.,<sup>7</sup> have not found any improvement in blood pressure deriving from the açai intake, but their sample was formed by normotensive individuals. However, Aqurashi et al.,<sup>6</sup> have reported a 1.4% increase in the flow-mediated dilation of the brachial artery resulting from the intake of 150 g of açai pulp in an acute test, which reflects a significant improvement in vascular function.

#### Effect of açai intake on lipid profile

Despite not finding any improvement in blood pressure, Udani et al. have shown a reduction in total cholesterol

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**Table 1 - Comparison of the nutrition facts of the açai pulp with servings of foods which display cardiovascular protection**

Dietary item (homemade amount)	Calories	Protein (g)	Total fat (g)	Carbohydrate available (g)	Total fibers (g)	Vitamin E (mg)
Açai pulp (100 g)	72	1	4.9	5.8	5.3	14.8
Avocado (100 g)	167	2	15.4	8.6	6.8	2
Powder cocoa (30 g)	123	6	3	18	6	0.1
Mix of oilseeds (28.5 g)	172	5.5	15.2	6.4	1.8	1.7
Extra virgin olive oil (14 mL)	120	0	14	0	0	1.9

*Adapted from the United States Department of Agriculture (USDA).<sup>2</sup>*

from 159 to 142 mg/dL ( $p < 0.030$ ) in overweight patients consuming 100 g of açai pulp twice a day for one month, but the other lipid profile parameters showed no change.<sup>7</sup> Surprisingly, Sadowska-Krępa et al.,<sup>8</sup> have reported an increase in HDL-C levels from 50 to 60 mg/dL in young athletes following the intake of 100 mL/day of açai juice for six weeks, in addition to a decrease in total cholesterol from 159 to 134 mg/dL, in LDL-C from 90 to 60 mg/dL, and in triglycerides from 94 to 72 mg/dL.

However, a new study has reported that the intake of 200 g/day of açai pulp for four weeks did not improve the traditional lipid profile parameters of healthy women. Nevertheless, açai consumption elevated the serum levels of apolipoprotein A1 and the activity of paraoxonase-1, whose molecules are HDL-C precursors. The consumption of açai improved the transfer of cholesteryl esters to HDL-C, a beneficial biochemical process, because that is an HDL-C function, which captures cholesteryl esters from VLDL-C (reverse cholesterol transport).<sup>9</sup>

## Conclusions/Dietary Management

The açai intake can be encouraged to patients already adept to its consumption or those who are willing to. However, one should be cautious about overvaluing its claimed effects on lipid profile and vascular function.

Regarding nutrition facts of the açai, shown in Table 1, ensures its usual use in dietary plans. However, attention should be paid to the foods added to açai preparations, such as sugar, honey, powder milk, peanut powder.

The açai pulp is popularly consumed combined with other foods, and some dietary items that can enhance the claimed cardiovascular effects of açai are cocoa or dark chocolate and oilseeds, such as almonds, chestnuts and walnuts.

## Author contributions

Conception and design of the research: Santos HO. Acquisition of data: Santos HO. Analysis and interpretation of the data: Santos HO. Writing of the manuscript: Santos HO. Critical revision of the manuscript for intellectual content: Santos HO.

## Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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## Ethics approval and consent to participate

This article does not contain any studies with human participants or animals performed by any of the authors.

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