INFLUENCE OF IN VITRO GASTROINTESTINAL DIGESTION ON PHENOLIC COMPOUNDS CONTENT FROM JUÇARA PULP AND POWDER

PEREIRA, D. C. S. 1; BERES, C. 2; GOMES, F. S. 3; SANTOS, K. M. O. 4; TONON, R. V. 5; MELLINGER-SILVA, C. 6; CABRAL, L. M. C. 7

1 Rural Federal University of Rio de Janeiro - Rio de Janeiro, dany.csp@gmail.com
2 Embrapa Agroindústria de Alimentos - Rio de Janeiro, carolberes@gmail.com
3 Embrapa Agroindústria de Alimentos - Rio de Janeiro, flavia.gomes@embrapa.br
4 Embrapa Agroindústria de Alimentos - Rio de Janeiro, karina.dos-santos@embrapa.br
5 Embrapa Agroindústria de Alimentos - Rio de Janeiro, renata.tonon@embrapa.br
6 Embrapa Agroindústria de Alimentos - Rio de Janeiro, caroline.mellinger@embrapa.br
7 Embrapa Agroindústria de Alimentos - Rio de Janeiro, lourdes.cabral@embrapa.br

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Abstract: Juçara fruit and its derivates increased commercialization are related to a high bioactive compounds content and to a need for environmental and cultural valorization. Health benefits of juçara are well established in vitro, however its bioaccessibility and effects on intestinal microbiota still need to be explored. It is estimated that 90-95% of the polyphenols resists to digestion and accumulate in the lumen of the large intestine, where the colonic microbiota, through fermentation, produce low molecular weight molecules, also named metabolites that may be the real responsible to health improvement. The effects on Bifidobacterium, Lactobacillus, Clostridium and E. coli, were evaluated after 24 h fermentation of juçara pulp and powder. Phenolic compounds (Follin and HPLC) and antioxidant capacity (ABTS and ORAC) were determined during static simulated in vitro digestion and colonic fermentation. Microbial fermentation of juçara pulp resulted in an increase on short-chain fatty acids production (440.71%) and Bifidobacterium cell count of 1 Log cycle and reduced 1 Log cycle in E. coli. After digestion, 24% (726.84 mg/100g) of total phenolic content reached the colon and an increase of 66% on the antioxidant capacity (2,752.29 μmol of Trolox/g) was observed. Approximately 42% (2,045.97 mg cyanidin-3-glucoside/100g) of anthocyanins remained accessible after 24 h fermentation. Despite the reduction on anthocyanin content, phenolic compounds increased after juçara powder and pulp digestion. Changes in the phenolic compounds and anthocyanins content were possibly responsible for the alteration on the antioxidant capacity, resulting in an increase on antioxidant capacity in the large intestine after colonic fermentation. Which suggests a digestion effect on the antioxidant capacity due to an increase on phenolic compounds content, a structural modification of anthocyanins, caused by enzymatic reactions in the gastrointestinal environment and due to the colonic microbiota metabolism. Juçara powder presented high bioactive properties and ability to modulate the intestinal microbiota.

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