Chapter 4

Cerrado fruits, study on their technological and medicinal applications: a review

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ABSTRACT
The Cerrado is a biome and is increasingly being explored due to its wide diversity of fruits that have characteristics of exotic flavors and great technological potential. Thus, this study aims to conduct bibliographical research on the fruits of the cerrado and highlight their benefits to health and its technological application to be explored. Both fruits highlighted in this study showed numerous health benefits as an antioxidant, antimicrobial, anticarcinogenic, antidegenerative, and aging retardant. In addition to the applications by the food industry, using such as juices, jellies, ice cream, and substitutes for conventional oils, where their phytochemical profiles guarantee a high added value product, characteristic of the fruits of this biome.

Keywords: Bioactive compounds, Cagaita, Murici, Pequi, Technological innovation

1 INTRODUCTION

The Brazilian Cerrado is one of the largest tropical savannah biomes in the world and is the second-largest rich Brazilian ecosystem in the world in terms of biodiversity (ARAÚJO et al., 2019; OLIVEIRA-ALVES et al., 2020; SAWYER et al., 2018; SCHIASSI et al., 2018). Exotic fruits have a high nutritional value and sensory attributes, with diverse applicability for use in industry, in addition to economic and social importance for local communities in the region (SCHIASSI et al., 2018; SOUZA et al., 2012).

This biome is home to a large number of native species rich in nutrients and phenolics that have several health benefits and can be exploited for food, medicinal and cosmetic purposes, with emphasis on pequi, cagaita, and murici (ARRUDA, ARAÚJO & MAROSTICA JUNIOR, 2022). These fruits have a high concentration of antioxidants, comparable to commonly consumed fruits such as plums, oranges, guavas, and various red and citrus fruits (BORGES et al., 2022). The use and study of plants containing phytochemical compounds that promote health and well-being have been increasing every year by consumers and industry (SÁ COUTINHO et al., 2020).

Several fruit species from the Brazilian cerrado have the potential for economic exploitation, as they have high nutritional and functional value, in addition to providing the production of by-products rich in bioactive compounds (ALBUQUERQUE et al., 2018; FERREIRA et al., 2022; GARCIA et al., 2016; REIS & SCHMIELE, 2019; VIEIRA et al., 2017).

Thus, the present work aimed to carry out a bibliographical review regarding more recent research on fruits of the cerrado, highlighting the pequi, the cagaita and the murici.

2 CERRADO

The Brazilian Cerrado is the second largest biome in Brazil and South America, it is located in the central region of Brazil, covering approximately 2 million km2, which represents about 23% of the Brazilian territory and 11% of the territorial area of South America. South, which includes the states of Goiás, Tocantins, Mato Grosso do Sul, Minas Gerais, Bahia, Mato Grosso, Maranhão and Piauí (LOPES & GUILHERME, 2016; RATTER et al., 2003; REIS & SCHMIELE, 2019; REZENDE-SILVA et al., 2019). This biome is considered one of the 25 most biodiverse sites in the world and the savanna formation that has the greatest plant diversity. It is estimated that the Brazilian Cerrado is home to around 12,356 naturally occurring species, including herbaceous plants, shrubs, trees and vines, of which 11,627 species are native and approximately 44% are endemic (ARRUDA & DE ALMEIDA, 2015). Its species represent about 30% and 5% of Brazilian and world biodiversity, respectively. These species have enormous potential for use, as their seeds, flowers, fruits, leaves, roots, bark, latex, and resins are used in the formulation of foods and medicines (more than 220 plant species) (ARRUDA, 2017; GONÇALVES et al. al., 2019; MYERS et al., 2000).

The exotic fruit species of the Cerrado have numerous intense and unique sensory characteristics, attributes that make these fruits an alternative raw material for the development of new innovative and healthy products for the food industry, due to the high nutritional value with colors, flavors, and intense and characteristic aromas (DE SOUZA et al., 2012; MORZELLE et al., 2015; OLIVEIRA-FILHO et al., 2002; OLIVEIRA et al., 2012).

3 FRUITS OF CERRADO

The native fruits of the Brazilian Cerrado are widely used by the local population, mainly in natural form, but few people from other regions have access to them. They occupy a prominent place in the cerrado ecosystem, being sold in regional free fairs and with great popular acceptance. The characterization of bioactive compounds in Cerrado fruits is of great relevance for the search for alternative sources that can group desirable attributes (antioxidant, antimicrobial, anticarcinogenic, antidegenerative and aging properties). One of the current market trends is the consumer's search for products with sensory and nutritional qualities that provide health and well-being, which has made the food industry adapt to these market segments, seeking new formulations and innovative food products (OLIVEIRA JÚNIOR et al., 2016). These innovations can be either in the formulation of new products or even in the in natural ingestion of the fruit.

3.1 PEQUI (Caryocar brasiliense)

The pequi tree native to Brazil is a perennial plant that has a trunk with rough bark, long and thick branches, and an irregular crown (Figure 1). Its fruit, the pequi, has a large greenish-brown exocarp, white external mesocarp, internal mesocarp (pulp) composed of yellowish pyrenes and white almonds covered by a layer of thorns (GONÇALVES et al., 2011). Local communities in the Brazilian Cerrado use pequi in different ways, mainly in nature or in the form of jellies, creams, liqueurs, among other by-products (GERMANO et al., 2007).

Figure 1. Pequi tree during its fructification and ripened fruit.

Source: author.

Pequi is a fruit that has a high content of carotenoids, lipids, fibers, zinc and magnesium, and serves as a source of calcium and polyphenols (RIBEIRO et al., 2014). From the fruit, oil and compounds can be extracted from both the pulp and the almond, which have several applications for health and well-being, such as for therapeutic purposes, treatment of wounds, muscle pain, gastric and inflammatory diseases and cancer treatment due to the reduction in DNA damage and lipid peroxidation (COLOMBO et al., 2015; OMBREDANE et al., 2022; SILVA et al., 2022; TORRES et al., 2018). In popular medicine, pequi is known for its anti-inflammatory, tonic and aphrodisiac properties (DE OLIVEIRA et al., 2018). The oil from its pulp is commonly used to treat bronchitis, colds and flu, and to control tumors (ROLL et al., 2018). In addition to studies also demonstrate the chemopreventive effects of pequi oil in pre-neoplastic lesions in a model of hepatocarcinogenesis in mice (COLOMBO et al., 2015; PALMEIRA et al., 2016).

Another form studied is as ingredients for new products, such as pulp flour and oil with the addition of probiotics (CEDRAN et al., 2022; Ferraz and Silva et al., 2022). Some studies used pequi biomass residues as a sustainable alternative for energy generation (GHESTI et al., 2022).

Pequi oil has numerous benefits for technological application due to its characteristics of having antibacterial, anti-inflammatory and antioxidant activity, and may be an interesting alternative to traditional oils used, such as soy and corn (SARAIVA et al., 2011; TORRES et al. , 2016; YAMAGUCHI et al., 2017). This product is composed of high levels of antioxidant molecules such as carotenoids, vitamin C, gallic acid, quinic acid, quercetin and quercetin 3-O-arabinose and mainly of fatty acids (BREDA et al., 2016; MIRANDA-VILELA et al., 2014; ROESLER et al., 2008).

3.2 CAGAITA (Eugenia Dysenterica Dc)

The cagaiteira or cagaita is a species of the botanical family Myrtaceae, the same family as guavas, araças, pitangas, gabirobas and eucalyptus. It is a predominantly allogamic tree. The flowers are small, 1.5 to 2 cm in diameter, their fruiting begins within a month after flowering, between August and October, at the end of the dry season (Figure 2). The edible fruits, with economic potential, are slightly flattened and have 2 to 3 cm in diameter, weigh 14 to 20 grams and contain 1 to 3 white seeds. Its production is around 500 to more than 2000 fruits per year, which are highly perishable. The plant can reach up to 10 meters in height and the trunk can be up to 40 cm in diameter, with suberous and cracked bark, with the appearance of well-defined and overlapping blocks (MARTINOTTO et al., 2008; MENDONÇA et al., 2008; CARDOSO et al., 2011; LINARES-PALOMINO et al., 2011; RODRIGUES et al., 2016). The flowers, leaves, inner bark and bark are well known in folk medicine, being used in the form of bottles and teas to treat diabetes, jaundice and as an antidiarrheal (PALHARES, 2003; SCARIOT & RIBEIRO, 2015; SILVA et al., 2001).

Figure 2. Flowering trees in Cagaita.

Source: author.

The fruit has a round shape, slightly flattened, with a brittle skin and a bright yellow color. Inside, there is the presence of juicy pulp of light yellow color and flattened seeds of cream color (Figure 3). Of all the physical characteristics of the fruit, the mass of the pulp is the most important for economic use. The consumption of the cagaita fruit, as well as its technological exploitation, should be encouraged, especially in families and socially vulnerable groups located in areas of the Cerrado characterized by high levels of food insecurity and where there may be a lack of foods considered to be sources of nutrients. (CARDOSO et al., 2011).V

Figure 3. Cagaita in natura cut crosswise and the whole fruit.

Source: author.

The fruit and its extract showed promising results as an antidiabetic and hypoglycemic effect (DE ARAUJO et al., 2021; JUSTINO et al., 2022), in the treatment of skin infections (DA SILVA et al., 2020), antidiarrheal effect (GALHEIGO et al., 2020). al., 2016), antileukemic activity (VITEK et al., 2017), new products such as the essential oil of the fruit (DIAS et al., 2022), in addition to the additive function (RIAL et al., 2020). A laxative effect was evidenced, especially when very ripe or fermented (LIMA et al., 2010), antioxidant and antiglycation (JUSTINO et al., 2020). Furthermore, a fraction rich in polyphenols from the

fruit pulp controlled hyperlipidemia and fasting hyperglycemia in obese mice (DONADO-PESTANA et al., 2015). Many of the health-promoting effects, such as alleviating diabetes complications, are related to polyphenolic compounds such as quercetin, catechin, epicatechin gallate and proanthocyanidins, which are naturally present in the leaves and pulp of the fruit. (JUSTINO et al., 2020; PRADO et al., 2014).

Some technological applications are already available in the market using the cagaita fruit as raw material, such as jellies, ice cream, liqueurs and juices. Several macro and microelements, such as vitamins, folates, carotenoids and phenolic compounds, have been identified in the pulp, which results in greater added value for products that use it (CARDOSO et al., 2011; CORREIA et al., 2016; LIMA et al. al., 2011; MOREIRA et al., 2017).

In addition to the application by the food industry, the fruit presents interesting compounds for other markets, such as incorporation in dermatological and cosmetic preparations due to the presence of ellagitannins and proanthocyanidins tannins, flavonoids such as quercetin and kaempferol derivatives and phenolic acids, ellagic acid, catechin and ser source of vitamin C (CARDOSO et al., 2011; CECÍLIO et al., 2012; DONADO-PESTANA et al., 2015; ELMETS et al., 2001; GONÇALVES et al., 2010; HENNING et al., 2003; SILVA et al., 2015; STALLINGS & LUPO, 2009).

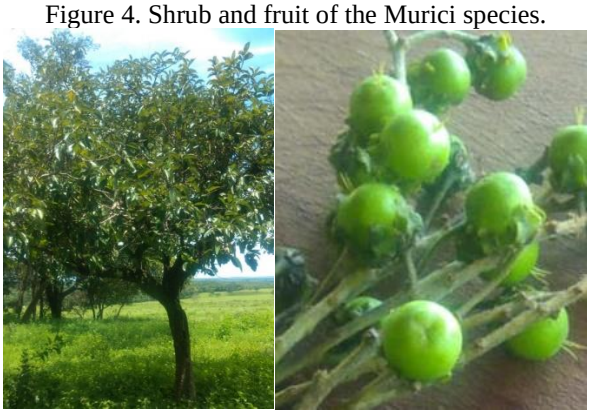
3.3 MURICI (Byrsonima)

Byrsonima species are popularly known as “murici” and are native to some Latin American countries. They inhabit the phytogeographic domains of the Amazon, Cerrado, Pantanal, Atlantic Forest and Caatinga in Brazil, and have several variations (ARAUJO et al., 2018). The leaves and bark are used as a diuretic, anti-hemorrhagic, antimicrobial, healing and anti-inflammatory agent in Brazilian folk medicine (ALMEIDA et al., 1998; ARAUJO et al., 2018). In Brazil, plants of the genus Byrsonima are commonly found in the Cerrado and are consumed as food in the form of juices, jellies and alcoholic beverages in the Northeast and North regions. It has been shown that species of this genus have distinct pharmacological activities, which can be attributed to the presence of phytochemicals, characterizing it as a fruit with antioxidant potential (GUILHON-SIMPLICIO & PEREIRA, 2011; PEREIRA et al., 2015; RINALDO et al., 2010; SANNOMIYA et al., 2005).

The murici is a fruit that grows on a small tree native to tropical America and spread throughout the Amazon region. The fruit (Figure 4) is a drupe measuring 1 cm to 2 cm in diameter and with a yellow color and small seed inside, whose pulp is consumed in natura or the form of natural products such as nectars, sweets, juices, liqueurs, pastes, puree, dehydrated fruit and ice cream, due to its exotic flavor and odor (ANICETO et al., 2021; COSTA et al., 2019; GUIMARÃES & SILVA, 2008; STAFUSSA et al., 2021; SOUZA et al., 2020). It is explored by extractive and cultivated in the internal market, with commercialization in free fairs and public markets in the region where this species is cultivated (ALVES & FRANCO, 2003; BÉJAR & MALONE, 1993; NERI-NUMA et al., 2018). Its fruiting period occurs between October and February (HAMACEK et al., 2014), the genus is known for having a pulp rich in

carotenoids, phenolic compounds and unsaturated fatty acids (BORGES et al., 2022; DE SOUZA et al., 2012; MARIUTTI, RODRIGUES & MERCADANTE, 2013; NEVES et al., 2015; PIRES et al., 2019; REZENDE & FRAGA, 2003).

Figure 4. Shrub and fruit of the Murici species.



Source: author.

Components such as catechins, unsaturated fatty acids, gallic acid derivatives and flavonoids have beneficial effects on health, which justifies the use of murici in the treatment and/or prevention of diseases (DOSSEH et al., 1980; LIMA et al., 2008; MARTÍNEZ-VÁZQUEZ et al., 1999; SANNOMIYA et al., 2007). Lutein, the main carotenoid present in murici (MARIUTTI, RODRIGUES & MERCADANTE, 2013), is associated with a reduced risk of developing macular degeneration (RASMUSSEN & JOHNSON, 2013). Quercetin was the main phenolic compound found in murici (MARIUTTI et al., 2014), which can be attributed to the hypoglycemic and antiglycation effects of the fruit (PEREZ-GUTIERREZ et al., 2010), in the treatment of diabetes mellitus (BRAGA et al. , 2013), treatment and/or prevention of cardiovascular diseases, such as atherosclerosis, thrombosis, hypercholesterolemia (ATTIA et al., 2015; PINTO et al., 2018; SANTOS et al., 2018), gastroprotective, healing, antidiarrheal (CECÍLIO et al., 2018). al., 2012; DOS SANTOS et al., 2019; LIMA et al., 2008; SANTOS et al., 2012) and photo chemoprotective and antioxidant agent in the prevention/treatment of inflammation and oxidative stress of the skin induced by UVB radiation (DE SOUZA et al., 2018).

In addition, there are applications in pharmaceuticals and cosmetics (NERI-NUMA et al., 2018; SALDANHA et al., 2016), due to studies that showed promising results as chemopreventive agents and against hepatocarcinoma (SPECIAN et al., 2023) , antifungal activity (SANNOMIYA et al., 2022) and antiaging (SOUSA & BUARQUE, 2020). They also have antimicrobial action against Gram-positive and Gram-negative bacteria (HIGUCHI et al., 2011; LIMA et al., 2008; MICHELIN et al., 2008).

4 CONCLUSION

Thus, it is possible to observe that the fruits of the cerrado have numerous benefits to health and well-being and several technological applications, proving to be highly nutritious and of high added value, allowing applications as raw material and a greater variation of the products found in the market.

REFERENCES

ALBUQUERQUE, T. M. R.; GARCIA, E. F.; ARAÚJO, A. O.; MAGNANI, M.; SAARELA, M.; DE SOUZA, E. L. In vitro characterization of Lactobacillus strains isolated from fruit processing by-products as potential probiotics. **Probio. Antimicrob. Proteins**, v. 10, n. 4, p. 704-716, 2018. DOI: 10.1007/s12602-017-9318-2

ALMEIDA, S. P.; PROENÇA, C. E. B.; SANO, S. M.; RIBEIRO, J. F. **Cerrados: espécies vegetais úteis**. Planaltina: EMBRAPA-CPAC, 464p (1998).

ALVES, G. L.; FRANCO, M. R. B. Headspace gas chromatography–mass spectrometry of volatile compounds in murici (Byrsonima crassifolia L. Rich**). J. Chromatogr. A**, v. 985, p. 297-301, 2003. DOI: 10.1016/S0021-9673(02)01398-5

ANICETO, A.; MONTENEGRO, J.; CADENA, R. D. S.; TEODORO, A. J. Physicochemical characterization, antioxidant capacity, and sensory properties of murici (Byrsonima crassifolia (L.) kunth) and taperebá (Spondias mombin L.) beverages. **Molecules**, v. 26, n. 2, p. 332, 2021. DOI: 10.3390/molecules26020332

ARAUJO, R. R.; SANTOS, E. D.; FARIAS, D. B.; LEMOS, E. E. P.; ALVES, R. E. Byrsonima crassifolia e B. verbascifolia murici. **Plantas para o futuro- Região Nordeste**, p. 137-146, 2018. DOI: https://www.infoteca.cnptia.embrapa.br/infoteca/bitstream/doc/1104683/1/Murici.pdf

ARAÚJO, R. S.; BARROS, N. V. A.; PORTO, R. C. L.; BRANDRÃO, A. C. M. S.; LIMA, A.; FETT, R. Bioactive compounds and antioxidant activity three fruit species from the Brazilian Cerrado. **Rev. Bras. Frutic**., v. 41, p. 1-8, 2019. DOI: 10.1590/0100-29452019011

ARRUDA, H. S.; ARAÚJO, M. V. L.; MAROSTICA JUNIOR, M. R Underexploited Brazilian Cerrado fruits as sources of phenolic compounds for diseases management: A review. **Food Chemistry: Molecular Sciences**, v. 5, 100148, 2022. DOI: https://doi.org/10.1016/j.fochms.2022.100148.

ARRUDA, H. S. Potential of the Brazilian Cerrado Fruits in Food Science and Nutrition. **EC Nutrition**, v. 7, n. 1, p. 1-2, 2017.

ARRUDA, H. S.; DE ALMEIDA M. E. F. Frutos do Cerrado: Panorama. Resgate Cultural e Aproveitamento Culinário, Novas Edições Acadêmicas, 2015. DOI: https://www.morebooks.de/store/pt/book/frutos-do-cerrado/isbn/978-3-639-83794-0.

ATTIA, Y. A.; AL-HARTHI, M. A.; KORISH, M. A.; SHIBOOB, M. M. Fatty acid and cholesterol profiles and hypocholesterolemic, atherogenic, and thrombogenic indices of table eggs in the retail market. **Lipids Health Dis**., v. 14, p. 1-8, 2015. DOI: 10.1186/s12944-015-0133-z

BÉJAR, E.; MALONE, M. H. Pharmacological and chemical screening of Byrsonima crassifolia, a medicinal tree from Mexico. Part I. **J. Ethnopharmacol.**, v. 39, p. 141-158, 1993. DOI: 10.1016/0378-8741(93)90029-5

BRAGA, C. P.; MOMENTTI, A. C.; PEIXOTO, F. B.; BAPTISTA, R. D. F. F.; SANTOS, F. A.; FAVA, F. H.; FERNANDES, A.A.H. Influence of treatment with quercetin on lipid parameters and oxidative stress of pregnant diabetic rats**. J. Physiol. Pharmacol.**, v. 91, p. 171-177, 2013. DOI: 10.1139/cjpp-2012-0173

BREDA, C. A.; GASPERINI, A. M.; GARCIA, V. L.; MONTEIRO, K. M.; BATAGLION, G. A.; EBERLIN, M. N.; DUARTE, M. C. Phytochemical analysis and antifungal activity of extracts from leaves and fruit residues of brazilian savanna plants aiming its use as safe fungicides. **Nat. Prod. Bioprospect**., v. 6, p. 195-204, 2016. DOI: 10.1007/s13659-016-0101-y

BORGES, P. R. S.; EDELENBOS, M.; LARSEN, E.; HERNANDES, T.; NUNES, E. E.; VILAS BOAS, E. V. B.; PIRES, C. R. F. The bioactive constituents and antioxidant activities of ten selected Brazilian Cerrado fruits. **Food Chemistry: X**, v. 14, 100268, 2022. DOI: https://doi.org/10.1016/j.fochx.2022.100268.

CARDOSO, L. M.; MARTINO, H. S. D.; MOREIRA, A. V. B.; RIBEIRO, S.M.R.; PINHEIRO-SANT'ANA, H.M. Cagaita (Eugenia dysenterica DC.) of the cerrado of Minas Gerais, Brazil: physical and chemical characterization, carotenoids and vitamins. **Food Research International**, v.44, n.7, p.2151–2154, 2011. DOI: 10.1016/j.foodres.2011.03.005.

CECÍLIO, A. B.; DE FARIA, D. B.; OLIVEIRA, P. C.; CALDAS, S.; DE OLIVEIRA, D. A.; SOBRAL, M. E. G.; DUARTE, M. G. R.; MOREIRA, C. P. S.; SILVA, C. G.; DE ALMEIDA, V. L. Screening of Brazilian medicinal plants for antiviral activity against rotavirus. **Journal of Ethnopharmacology**, v. 141, n. 3, p. 975-981, 2012. DOI: https://doi.org/10.1016/j.jep.2012.03.031

CEDRAN, M. F.; RODRIGUES, F. J.; SATO, H. H.; BICAS, J. L. Optimization of a water-in-oil emulsion containing Limosilactobacillus reuteri: Applicability of pequi oil as a continuous phase. **Current Research in Biotechnology**, v. 4, p. 318-325, 2022. DOI: https://doi.org/10.1016/j.crbiot.2022.07.003.

COSTA, E. D. A.; SOUSA, P. H. M. D.; SIQUEIRA, A. C. P.; FIGUEIREDO, E. A. T. D.; GOUVEIA, S. T.; FIGUEIREDO, R. W. D.; GOUVEIA, S. T.; FIGUEIREDO, R. W. D.; MAIA, G. S. C.; GOMES, D. S. Fruit pastes with organic honey texturized with gellan gum: Bioacessibility of antioxidant activity and sensory analysis fruit pastes with gellan and organic honey. **Food Science and Technology**, v. 39, p. 667-676, 2019. DOI: 10.1590/fst.05518

COLOMBO, N. B.; RANGEL, M. P.; MARTINS, V.; HAGE, M.; GELAIN, D. P.; BARBEIRO, D. F.; GRISOLIA, C. K.; PARRA, E. R.; CAPELOZZI, V. L. Caryocar brasiliense camb protects against genomic and oxidative damage in urethane-induced lung carcinogenesis. **Braz. J. Med. Biol. Res**., v. 48, p. 852-862, 2015. DOI: 10.1590/1414-431x20154467

CORREIA, A. F.; SILVEIRA, D.; FONSECA-BAZZO, Y. M.; MAGALHÃES, P.O.; FAGG, C.W.; DA SILVA, E.C.; GOMES, S.M.; GANDOLFI, L.; PRATESI, R.; NÓBREGA, Y.K.M. Activity of crude extracts from Brazilian cerrado plants against clinically relevant Candida species. **BMC Complementary and Alternative Medicine**, v.16, p.203, 2016. DOI: 10.1186/s12906-016-1164-3.

DA SILVA, S. M. MAZUTTI; FERREIRA-NUNES, R.; AMORE, C. R.; MARTINS, D. H. N.; PIC-TAYLOR, A.; FONSECA-BAZZO, Y. M.; SILVEIRA, D.; GELFUSO, G. M.; MAGALHÃES, P. O. Emulsion incorporating Eugenia dysenterica aqueous extract entrapped in chitosan microparticles as a novel topical treatment of cutaneous infections. **Journal of Drug Delivery Science and Technology**, v. 55, 101372, 2020. DOI: https://doi.org/10.1016/j.jddst.2019.101372.

DE ARAUJO, R. L.; TOMÁS-BARBERÁN, F. A.; DOS SANTOS, R. F.; MARTINEZ-BLAZQUEZ, J. A.; GENOVESE, M. I. Postprandial glucose-lowering effect of cagaita (Eugenia dysenterica DC) fruit juice in dysglycemic subjects with metabolic syndrome: An exploratory study. **Food Research International**, v. 142, 110209, 2021. DOI: https://doi.org/10.1016/j.foodres.2021.110209.

DE OLIVEIRA, T. S.; THOMAZ, D. V.; NERI, H. F. S.; CERQUEIRA, L. B.; GARCIA, L. F.; GIL, H. P. V.; PONTAROLO, R.; CAMPOS, F. R.; COSTA, E. A.; DOS SANTOS, F. C. A.; SOUZA GIL, E.; GHEDINI, P. C. Neuroprotective effect of caryocar brasiliense camb. leaves is associated with anticholinesterase and antioxidant properties. **Oxid. Med. Cell Longev**., 2018, p. 1-12, 2018. DOI: 10.1155/2018/9842908

DE SOUZA, R. O.; ALVES, G. A. D.; AGUILLERA, A.L.S.; ROGEZ, H.; FONSECA, M. J. V. Photochemoprotective effect of a fraction of a partially purified extract of Byrsonima crassifolia leaves against UVB-induced oxidative stress in fibroblasts and hairless mice. **J. Photochem. Photobiol. B**, v. 178, p. 53-60, 2018. DOI: https://doi.org/10.1016/j.jphotobiol.2017.10.033

DE SOUZA, V. R.; PEREIRA, P. A. P.; DA SILVA, T. L. T.; LIMA, L. C. O.; PIO, R.; QUEIROZ, F. Determination of bioactive compounds, antioxidant activity and chemical composition of Cerrado Brazilian fruits. **Food Chemistry**, v. 134, p. 381–386, 2012. DOI: 10.1016/j.foodchem.2014.01.125

DIAS, E. B. S.; CAMILO, Y. M. V.; DE SOUZA, E. R. B.; FERRI, P. H. Essential oil variability in Eugenia dysenterica fruits. **Natural Product Research**, 2022. DOI: https://doi.org/10.1080/14786419.2021.1947273.

DONADO-PESTANA, C. M.; BELCHIOR, T.; GENOVESE, M. I. Phenolic compounds from cagaita (Eugenia dysenterica DC.) fruit prevent body weight and fat mass gain induced by a high-fat, high-sucrose diet. **Food Research International**, v. 77, p. 177-185, 2015. DOI: https://doi.org/10.1016/j.foodres.2015.06.044

DOS SANTOS, R. C.; BONAMIN, F.; PÉRICO, L. L.; RODRIGUES, V. P.; ZANATTA, A. C.; RODRIGUES, C. M.; SANNOMIYA, M.; RAMOS, M. A. S.; BONIFÁCIO, B. V.; BAUAB, T. M.; TAMASHIRO, J.; ROCHA, L. R. M.; VILEGAS, W.; HIRUMA-LIMA C. A. Byrsonima intermedia A. Juss partitions promote gastroprotection against peptic ulcers and improve healing through antioxidant and anti-inflammatory activities. Biomed. Pharmacother. Biomed. Pharmacother., v. 111, p. 1112-1123, 2019. DOI: https://doi.org/10.1016/j.biopha.2018.12.132

DOSSEH, C.; MORETTI, C.; TESSIER, A.M.; DELAVEAU, P. Etude chimique des feuilles de Byrsonima verbascifolia rich. ex. Juss. **Plant. Médicinales Phythér**., v. 14, n. 3, p. 136-142, 1980. DOI: https://horizon.documentation.ird.fr/exl-doc/pleins_textes/pleins_textes_5/b_fdi_12-13/15825.pdf

ELMETS, C. A.; SINGH, D.; TUBESING, K.; MATSUI, M; KATIYAR, S.; MUKHTARET. H. Cutaneous photoprotection from ultraviolet injury by green tea polyphenols**. Jounal of the American Academy of Dermatology**, v. 44, p. 425–432, 2001. DOI: 10.1067/mjd.2001.112919.

FERREIRA, B. A.; DA SILVA, A. R.; FILBIDO, G. S.; NARITA, I. M. P.; PINHEIRO, A. P. O.; CRUZ E SILVA, D.; NASCIMENTO, E.; VILLA, R. D.; DE OLIVEIRA, A. P. In vitro bioaccessibility of the bioactive compounds and minerals in the pulp and peel of Buchenavia tomentosa Eichler fruits and their antioxidant capacities. **Measurement: Food**, v. 8, 100064, 2022. DOI: https://doi.org/10.1016/j.meafoo.2022.100064.

FERREIRA, H. C.; SERRA, C. P.; LEMOS, V. S.; BRAGA, F. C.; CORTES, S. F. Nitric oxide-dependent vasodilatation by ethanolic extract of Hancornia speciosa via phosphatidyl-inositol 3-kinase. **J. Ethnopharmacol**., v. 109, p. 161-164, 2007a. DOI: https://doi.org/10.1016/j.jep.2006.06.009

FERREIRA, H. C.; SERRA, C. P.; ENDRINGER, D. C.; LEMOS, V. S.; BRAGA, F. C.; CORTES, S. F. Endothelium-dependent vasodilation induced by Hancornia speciosa in rat superior mesenteric artery. **Phytomedicine**, v. 14, p. 473-478, 2007b. DOI: https://doi.org/10.1016/j.phymed.2006.11.008

FERRAZ E SILVA, L. M. S.; PEREIRA, G. S. L.; RIBEIRO, I. G.; BRAGA-SOUTO, R. N.; TEIXEIRA, M. G.; VIEIRA, C. R.; DE LIMA, J. P. Production, characterization and shelf-life evaluation of Caryocar brasiliense pulp flour. **International Journal of Gastronomy and Food Science**, v. 28, 100512, 2022. DOI: https://doi.org/10.1016/j.ijgfs.2022.100512.

GALHEIGO, M. R. U.; PRADO, L. C. S.; MUNDIN, A. M. M.; GOMES, D. O.; CHANG, R.; LIMA, A. M. C.; CANABRAVA, H. A. N.; BISPO-DA-SILVA, L. B. Antidiarrhoeic effect of Eugenia dysenterica DC (Myrtaceae) leaf essential oil. **Natural Product Research**, v. 30, n. 10, p. 1182-1185, 2016. DOI: https://doi.org/10.1080/14786419.2015.1043633.

GARCIA, E. F.; LUCIANO, W. A.; XAVIER, D. E.; DA COSTA, W. C. A.; OLIVEIRA, K. S.; FRANCO, O. L.; MORAIS JÚNIOR, M. A.; LUCENA, B. T. L.; PICÃO, R. C.; MAGNANI, M.; SAARELA, M.; DE SOUZA, E. L. Identification of lactic acid bacteria in fruit pulp processing byproducts and potential probiotic properties of selected Lactobacillus strains. **Frontiers in Microbiology**, v. 7, p. 1371, 2016. DOI: 10.3389/fmicb.2016.01371

GERMANO, J. N.; SILVA, R. L. A.; SANTOS, E. M. Estudo etnobotânico das plantas medicinais do cerrado do estado de Mato Grosso. **Revista Brasileira de Plantas Medicinais**, v. 3, n. 1, p. 23-31, 2007. DOI: 10.1590/S0102-33062003000400009

GHESTI, G. F.; SILVEIRA, E. A.; GUIMARÃES, M. G.; EVARISTO, R. B.W.; COSTA, M. Towards a sustainable waste-to-energy pathway to pequi biomass residues: Biochar, syngas, and biodiesel analysis. **Waste Management,** v. 143, p. 144-156, 2022. DOI: https://doi.org/10.1016/j.wasman.2022.02.022.

GONÇALVES, L. G. V.; ANDRADE, F. R.; JUNIOR, B. H. M.; SCHOSSLER, T. R.; LENZA, E.; MARIMON, B. S. Biometria de frutos e sementes de mangaba (Hancornia speciosa Gomes) em vegetação natural na região leste de Mato Grosso. **Brasil. Revista de Ciências Agrárias**, v. 36, n. 1, p. 31-40, 2019. DOI: 10.19084/rca.16280

GONÇALVES, G. A. S.; VILAS BOAS, E. V. B.; RESENDE, J. V.; MACHADO, A. L. L.; VILAS BOAS, B. M. Qualidade dos frutos do Pequizeiro submetidos a diferentes tempos de cozimento. **Revista Ciência e Agrotecnologia**, v. 35, n. 2, p. 377-385, 2011. DOI: 10.1590/S1413-70542011000200020

GONÇALVES, A. E. D. S. S.; LAJOLO, F. M.; GENOVESE, M. I., Chemical composition and antioxidant/antidiabetic potential of Brazilian native fruits and commercial frozen pulps. **Journal of Agricultural and Food Chemistry**, v. 58, n. 8, p. 4666-4674, 2010. DOI: https://doi.org/10.1021/jf903875u

GUILHON-SIMPLICIO, F.; PEREIRA, M. M. Aspectos químicos e farmacológicos de Byrsonima (Malpighiaceae). **Quím. Nova**, v. 34, n. 6, p. 1032-1041, 2011. DOI: https://doi.org/10.1590/S0100-40422011000600021

GUIMARÃES, M. M.; SILVA, M. S. Nutritional value and chemical and physical chacacteristics of dried murici fruits (Byrsonima verbascifolia). **Food Science and Technology**, v. 28, n. 4, p. 817-821, 2008. DOI: 10.1590/S0101-20612008000400009

HAMACEK, F. R.; MARTINO, H. S.; PINHEIRO-SANT'ANA H. M. Murici, fruit from the cerrado of Minas Gerais, Brazil: Physical and physicochemical characteristics, and occurrence and concentration of carotenoids and vitamins. **Fruits**, v. 69, n. 6, p. 459-472, 2014. DOI: 10.1051/fruits/2014032

HENNING, S. M.; FAJARDO-LIRA C.; LEE, H. W.; YOUSSEFIAN, A. A.; GO, V. L. W.; HEBERET, D. Catechin content of 18 teas and a green tea extract supplement correlates with the antioxidant capacity. **Nutrition and Cancer**, v.45, n.2, p.226–235, 2003. DOI: 1 0.1207/S15327914NC4502_13.

HIGUCHI, M. S.; PAVAN, F. R.; LEITE, S. R. A.; SATO, D. N.; FRANZBLAU, S. G.; SACRAMENTO, L. V. S.; VILEGAS, W.; LEITE, C. Q. F. Byrsonima fagifolia Niedenzu apolar compounds with antitubercular activity. **Evid. Based Complement Alternat. Med.**, 128349, 2011. DOI: 10.1093/ecam/nen07708000500009

JUSTINO, A. B.; SILVA, H. C. G.; FRANCO, R. R.; PIMENTEL, I. O. C.; SILVA, N. F.; SARAIVA, A. L.; ESPINDOLA, F. S. Flavonoids and proanthocyanidins-rich fractions from Eugenia dysenterica fruits and leaves inhibit the formation of advanced glycation end-products and the activities of α-amylase and α-glucosidase. **Journal of Ethnopharmacology**, v. 285, 114902, 2022. DOI: https://doi.org/10.1016/j.jep.2021.114902.

JUSTINO, A. B.; DE MOURA, F. R. B.; FRANCO, R. R.; ESPINDOLA, F. S. α-Glucosidase and non-enzymatic glycation inhibitory potential of Eugenia dysenterica fruit pulp extracts. **Food Biosci**., v. 35, 100573, 2020. DOI: https://doi.org/10.1016/j.fbio.2020.100573

LIMA, T.; SILVA, O.; SILVA, L.; ROCHA, T. L.; GROSSI-DE-SÁ, M. F.; FRANCO, O. L.; LEONARDECZ, E. In Vivo Effects of Cagaita (Eugenia dysenterica, DC.) Leaf Extracts on Diarrhea Treatment. **Evidence-Based Complementary and Alternative Medicine**, v. 2011, 309390, 2011. DOI: 10.1155/2011/309390

LIMA, T. B.; SILVA, O. N.; OLIVEIRA, J. T.; VASCONCELOS, I. M.; SCALABRIN, F. B.; ROCHA, T. L.; GROSSI-DE-SÁ, M. F.; SILVA, L. P.; GUADAGNIN, R. V.; QUIRINO, B. F.; CASTRO, C. F.; LEONARDECZ, E.; FRANCO, O. L. Identification of E. dysenterica laxative peptide: a novel strategy in the treatment of chronic constipation and irritable bowel syndrome. **Peptides**, v. 31, n. 8, p. 1426-1433, 2010. DOI: https://doi.org/10.1016/j.peptides.2010.05.003

LIMA, Z. P.; DOS SANTOS, R. C.; TORRES, T. U.; SANNOMIYA, M.; RODRIGUES, C. M.; SANTOS, L. C.; PELLIZZON, C. H.; ROCHA, L. R. M.; VILEGAS, W.; BRITO, A. R. M. S.; CARDOSO, C. R. P.; VARANDA, E. A.; MORAES, H. P.; BAUAB, T. M.; CARLI, C.; CARLOS, I. Z.; HIRUMA-LIMA, C. A. Byrsonima fagifolia: an integrative study to validate the gastroprotective, healing, antidiarrheal, antimicrobial and mutagenic action. J. Ethnopharmacol., v. 120, n. 2, p. 149-160, 2008. DOI: https://doi.org/10.1016/j.jep.2008.07.047

LINARES-PALOMINO, R.; OLIVEIRA-FILHO, A. T.; PENNINGTON, R. T. **Neotropical seasonally dry forests: diversity, endemism, and biogeography of woody plants**. In: Dirzo R, Young HS, Mooney HA (eds), Seasonally dry tropical forests: ecology and conservation. Island Press, Washington, p. 3–21, 2011. DOI:10.5822/978-1-61091-021-7_1

LOPES, A. S.; GUILHERME, G. L. R. A career perspective on soil management in the cerrado region of Brazil. **Advances in Agronomy**, v. 137, p. 1–72, 2016. DOI: https://doi.org/10.1016/bs.agron.2015.12.004

MARTÍNEZ-VÁZQUEZ, M.; GONZÁLEZ-ESQUINCA, A. R.; CAZARES LUNA, L.; MORENO GUTIÉRREZ, M. N.; GARCÍA-ARGÁEZ, A. N. Antimicrobial activity of Byrsonima crassifolia (L.) H.B.K. **J. Ethnopharmacol.**, v. 66, p. 79-82, 1999. DOI: 10.1016/S0378-8741(98)00155-X

MARIUTTI, L. R. B.; RODRIGUES, E.; CHISTÉ, R. C.; FERNANDES, E.; MERCADANTE, A. Z. The Amazonian fruit Byrsonima crassifolia effectively scavenges reactive oxygen and nitrogen species and protects human erythrocytes against oxidative damage. **Food Res. Int.**, v. 64, p. 618-625, 2014. DOI: 10.1016/j.foodres.2014.07.032

MARIUTTI, L. R. B.; RODRIGUES, E.; MERCADANTE, A. Z. Carotenoids from Byrsonima crassifolia: identification, quantification and in vitro scavenging capacity against peroxyl radicals. **J. Food Anal.**, v. 31, p. 155-160, 2013. DOI: 10.1016/j.jfca.2013.05.005

MARTINOTTO, C.; PAIVA, R.; SOARES, F. P.; SANTOS, B. R.; NOGUEIRA, R. C. **Cagaiteira (Eugenia dysenterica DC.)**. Boletim Técnico. Editora UFLA, Lavras, 2008. DOI: http://repositorio.ufla.br/jspui/handle/1/48179

MENDONÇA, R.; FELFILI, J. M.; WALTER, B. M.; SILVA-JÚNIOR, M. C. S.; REZENDE, A. V.; FILGUEIRAS, T.S.; NOGUEIRA, P. E.; FAGG, C. W. **Flora vascular do bioma Cerrado: checklist com 12.356 espécies**. In: Sano S, Almeida P, Ribeiro JF (eds) Cerrado: ecologia e flora. Embrapa Informação Tecnológica, Brasília, p. 422–442, 2008.

MICHELIN, D. C.; SANNOMIYA, M.; FIGUEIREDO, M. E.; RINALDO, D.; SANTOS, L. C.; SOUZA-BRITO, A. R. M.; VILEGAS, W.; SALGADO, H. R. N. Antimicrobial activity of Byrsonima species (MAL- PIGHIACEAE). **Rev. Bras Farmacogn**, v. 18, p. 690-695, 2008. DOI: 10.1590/S0102-695X20C.T.

MIRANDA-VILELA, A. L.; GRISOLIA, C. K.; LONGO, J. P. F.; PEIXOTO, R. C. A.; DE ALMEIDA, M. C.; BARBOSA, L. C. P.; ROLL, M. M.; PORTILHO, F. A.; ESTEVANATO, L. L. C.; BOCCA, A. L.; BÁO, S. N.; LAVACA, Z. G. M. Oil rich in carotenoids instead of vitamins C and E as a better option to reduce doxorubicin-induced damage to normal cells of Ehrlich tumor-bearing mice: hematological, toxicological and histopathological evaluations. **J. Nutr. Biochem.**, p. 161-176, 2014. DOI: http://www.ncbi.nlm.nih.gov/pubmed/25127291

MOREIRA, L. C.; ÁVILA, R. I.; VELOSO, D. F. M. C.; PEDROSA, T. N.; LIMA, E. S.; DO COUTO, R. O.; LIMA, E. M.; BATISTA, A. C.; DE PAULA, J. R.; VALADARES, M. C. In vitro safety and

efficacy evaluations of a complex botanical mixture of Eugenia dysenterica DC (Myrtaceae): prospects for developing a new dermocosmetic product. **Toxicology in Vitro**, v. 45, p. 397-408, 2017. DOI: https://doi.org/10.1016/j.tiv.2017.04.002

MORZELLE, M. C.; BACHIEGA, P.; SOUZA, E. C.; VILAS BOAS, E. V. B.; LAMOUNIER, M. L. Caracterização química e física de frutos de curriola, gabiroba e murici provenientes do Cerrado brasileiro. **Revista Brasileira de Fruticultura**, v. 37, p. 96-103, 2015. DOI: https://doi.org/10.1590/0100-2945-036/14

MYERS, N.; MITTERMEIER, R. A.; MITTERMEIER, C. G.; DA FONSECA, G. A. B.; KENT, J. Biodiversity hotspots for conservation priorities. **Nature,** v. 403, p. 853–858, 2000. DOI: https://doi.org/10.1038/35002501

NERI-NUMA, I. A.; SANCHO, R. A. S.; PEREIRA, A. P. A.; PASTORE, G. M. Small Brazilian wild fruits: Nutrients, bioactive compounds, health-promotion properties and commercial interest. **Food Research International**, v. 103, p. 345-360, 2018. DOI: 10.1016/j.foodres.2017.10.053

NEVES, L. C.; DA SILVA, P. M. C.; LIMA, C. G. B.; BASTOS, V. J.; ROBERTO, S. R. Study to determine the optimum harvest date of murici (Byrsonima coccolobifolia Kunth.) from quality and functional atributes**. Sci. Hortic.**, v. 188, p. 49-56, 2015. DOI: 10.1016/j.scienta.2015.02.039

OLIVEIRA, V. B.; YAMADA, L. T.; FAGG, C. W.; BRANDÃO, M. G. L. Native foods from Brazilian biodiversity as a source of bioactive compounds. **Food Research International**, v. 48, p. 170–179, 2012. DOI: 10.1016/j.foodres.2012.03.011

OLIVEIRA-ALVES, S. C.; PEREIRA, R. S.; PEREIRA, A. B.; FERREIRA, A.; MECHA, E.; SILVA, A. B.; SERRA, A. T.; BRONZE, M. R. Identification of functional compounds in baru (Dipteryx alata Vog.) nuts: Nutritional value, volatile and phenolic composition, antioxidant activity and antiproliferative effect. **Food Research International**, p. 131, 2020. DOI: 10.1016/j.foodres.2020.109026

OLIVEIRA-FILHO, A. T.; RATTER, J. A.; OLIVEIRA, P. S.; MARQUÊS, R. J. **Vegetation physiognomies and woody flora of the Cerrado Biome The Cerrados of Brazil, Ecology and Natural History of a Neotropical Savanna**, Columbia University Press, 91p., 120p., 2002. DOI: https://hdl.handle.net/20.500.12594/4241

OLIVEIRA JÚNIOR, A. M.; CONCEIÇÃO SOARES, D. S.; SANTOS, J. T. S. NUNES, T. Avaliação de diferentes modelos de secagem para liofilização de mangabas maduras com diferentes diâmetros, através de indicadores de desempenho. **Scientia Plena**, v. 12, n. 5, p. 1-6, 2016. DOI: 10.14808/sci.plena.2016.054210.

OMBREDANE, A. S.; SILVA, L. R. A.; ARAUJO, V. H. S.; COSTA, P. L.; SILVA, L. C.; SAMPAIO, M. C.; LIMA, M. C. F.; VEIGA JUNIOR, V. F.; VIEIRA, I. J. C.; AZEVEDO, R. B.; JOANITTI, G. A. Pequi oil (Caryocar brasilense Cambess.) nanoemulsion alters cell proliferation and damages key organelles in triple-negative breast cancer cells in vitro. **Biomedicine & Pharmacotherapy**, v. 153,113348, 2022. DOI: https://doi.org/10.1016/j.biopha.2022.113348.

PALHARES, D. Caracterização farmacognóstica das folhas de Eugenia dysenterica DC (Myrtaceae Jussieu). **Lecta: revista de farmácia e biologia da Universidade São Francisco**, v. 21, n. ½, p. 29–36, 2003. DOI: https://pesquisa.bvsalud.org/portal/resource/pt/lil-418976

PALMEIRA, S. M.; SILVA, P. R.; FERRÃO, J. S.; LADD, A. A.; DAGLI, M. L.; GRISOLIA, C. K.; HERNANDEZ-BLAZQUEZ, F. J. Chemopreventive effects of pequi oil (Caryocar brasiliense Camb.) on preneoplastic lesions in a mouse model of hepatocarcinogenesis. **Eur. J. Cancer Prevent**., v. 25, p. 299-305, 2016. DOI: 10.1097/cej.0000000000000187

PEREIRA, A. B. D.; VERÍSSIMO, T. M.; OLIVEIRA, M. A.; ARAÚJO, I. A.; ALVES, R. J.; BRAGA, F. C. Development and validation of an HPLC-DAD method for quantification of bornesitol in extracts

from Hancornia speciosa leaves after derivatization with p-toluenesulfonyl chloride. **J. Chromatogr. B**, v. 887–888, p. 133-137, 2012. DOI: https://doi.org/10.1016/j.jchromb.2012.01.009

PEREIRA, A. C.; PEREIRA, A. B. D.; MOREIRA, C. C.; BOTION, L. M.; LEMOS, V. S.; BRAGA, F. C.; CORTES, S. F. Hancornia speciosa Gomes (Apocynaceae) as a potential anti-diabetic drug. **J. Ethnopharmacol**., v. 161, p. 30-35, 2015. DOI: https://doi.org/10.1016/j.jep.2014.11.050

PEREIRA, V. V.; BOREL, C. R.; SILVA, R. R. Phytochemical screening, total phenolic content and antioxidant activity of Byrsonima species. Nat. Prod. Res., v. 29, n. 15, p. 1461-1465, 2015. DOI: https://doi.org/10.1080/14786419.2014.1002407

PEREIRA, A. B. D.; GOMES, J. H. S.; PEREIRA, A. C.; DE PÁDUA, R. M.; CÔRTES, S. F.; SENA, M. M.; BRAGA, F. C. Definition of chemical markers for Hancornia speciosa Gomes by chemometric analysis based on the chemical composition of extracts, their vasorelaxant effect and α-glucosidase inhibition. **Journal of Ethnopharmacology**, v. 299, 115692, 2022. DOI: https://doi.org/10.1016/j.jep.2022.115692.

PEREZ-GUTIERREZ, R. M.; MUÑIZ-RAMIREZ, A.; GOMEZ, Y. G.; RAMÍREZ E. B. Antihyperglycemic, antihyperlipidemic and antiglycation effects of Byrsonima crassifolia fruit and seed in normal and streptozotocin-induced diabetic rats. **Plant Foods Hum. Nutr**., v. 65, p. 350-357, 2010. DOI: 10.1007/s11130-010-0181-5

PINTO, R. H. H.; SENA, C.; SANTOS, O. V.; COSTA, W. A.; RODRIGUES, A. M. C.; CARVALHO, R. N. Extraction of bacaba (Oenocarpus bacaba) oil with supercritical CO2: global yield isotherms, fatty acid composition, functional quality, oxidative stability, spectroscopic profile and antioxidant activity. **Grasas Aceites**, v. 69, p. 1-8, 2018. DOI: 10.3989/gya.0883171

PIRES, F. C. S.; SOUZA E SILVA, A. P.; SALAZAR, M. L. A. R.; DA COSTA, W. A.; DA COSTA, H. S. C.; LOPES, A. S.; ROGEZ, H.; JUNIOR, R. N. C. Determination of process parameters and bioactive properties of the murici pulp (Byrsonima crassifolia) extracts obtained by supercritical extraction. **The Journal of Supercritical Fluids**, v. 146, p. 128-135, 2019. DOI: https://doi.org/10.1016/j.supflu.2019.01.014.

PRADO, L. C.; SILVA, D. B.; DE OLIVEIRA-SILVA, G. L.; HIRAKI, K. R.; CANABRAVA, H. A.; BISPO-DA-SILVA, L. B. The gastroprotective effects of Eugenia dysenterica (Myrtaceae) leaf extract: the possible role of condensed tannins. **Biol. Pharmaceut. Bull**., v. 37, n. 5, p. 722-730, 2014. DOI: https://doi.org/10.1248/bpb.b13-00514

RASMUSSEN, H. M.; JOHNSON, E. J. Nutrients for the aging eye. **Clin. Interv. Aging**, v. 8, p. 741-748, 2013. DOI: 10.2147/CIA.S45399

RATTER, J. A.; BRIDGEWATER, S.; RIBEIRO, J. F. Analysis of the floristic composition of the brazilian cerrado vegetation III: comparison of the woody vegetation of 376 areas. **Edinburgh Journal of Botany**, v. 60, n. 1, p. 57–109, 2003. DOI: https://doi.org/10.1017/S0960428603000064

REIS, A. F.; SCHMIELE, M. Características e potencialidades dos frutos do Cerrado na indústria de alimentos. **Brazilian Journal of Food Technology**, v. 22, 2017150, 2019. DOI: https://doi.org/10.1590/1981-6723.15017.

REZENDE, C. M.; FRAGA, S. R. G. Chemical and aroma determination of the pulp and seeds of murici (Byrsonima crassifolia L.). **J. Braz. Chem. Soc**., v. 14, p. 425-428, 2003. DOI: 10.1590/S0103-50532003000300014

REZENDE-SILVA, S. L.; COSTA, A. C.; DYSZY, F. H.; BATISTA, P. F.; CRISPIM-FILHO, A. J.; NASCIMENTO, K. J. T.; DA SILVA A. A. Pouteria torta is a remarkable native plant for biomonitoring the glyphosate effects on Cerrado vegetation. **Ecological Indicators**, v. 102, p. 497-506, 2019. DOI: 10.1016/j.ecolind.2019.03.003.

RIAL, R. C.; MERLO, T. C.; SANTOS, P. H. M.; MELO, L. F. D.; BARBOSA, R. A.; DE FREITAS, O. N.; NAZÁRIO, C. E. D.; VIANA, L. H. Evaluation of oxidative stability of soybean methyl biodiesel using extract of cagaite leaves (Eugenia dysenterica DC.) as additive. **Renewable Energy**, v. 152, p. 1079-1085, 2020. DOI: https://doi.org/10.1016/j.renene.2020.01.121.

RIBEIRO, D. M.; FERNANDES, D. C.; ALVES, A. M.; NAVES, M. M. V. Carotenoids are related to the colour and lipid content of the pequi (Caryocar brasiliense Camb.) pulp from the Brazilian Savanna. **Food Sci. Technol**., v. 34, n. 3, p. 507-512, 2014. DOI: http://dx.doi.org/10.1590/1678-457X.6369

RINALDO, D.; BATISTA, J. M.; RODRIGUES, J.; BENFATTI, A. C.; RODRIGUES, C. M.; DOS SANTOS, L. C.; FURLAN, M.; VILEGAS, W. Determination of catechin diastereomers from the leaves of Byrsonima species using chiral HPLC-PAD-CD. **Chirality**, v. 22, n. 8, p. 726-733, 2010. DOI: https://doi.org/10.1002/chir.20824

RODRIGUES, E. B.; COLLEVATTI, R. G.; CHAVES, L. J.; MOREIRA, L. R.; TELLES, M. P. C. Mating system and pollen dispersal in Eugenia dysenterica (Myrtaceae) germplasm collection: tools for conservation and domestication. **Genetica**, v. 144, p. 139–146, 2016. DOI: 10.1007/s10709-016-9884-3

ROESLER, R.; CATHARINO, R.; MALTA, L.; EBERLIN, M.; PASTORE, G. Antioxidant activity of Caryocar brasiliense (pequi) and characterization of components by electrospray ionization mass spectrometry. **Food Chem**., v. 110, p. 711-717, 2008. DOI: 10.1016/j.foodchem.2008.02.048

ROLL, M. M.; MIRANDA-VILELA, A. L.; LONGO, J. P. F.; AGOSTINI-COSTA, T. D. S.; GRISOLIA, C. K. The pequi pulp oil (Caryocar brasiliense Camb.) provides protection against aging-related anemia, inflammation and oxidative stress in Swiss mice, especially in females. **Genet. Mol. Biol**., v. 41, p. 858-869, 2018. DOI: 10.1590/1678-4685-gmb-2017-0218

SÁ COUTINHO, D.; PIRES, J.; GOMES, H.; RAFFIN POHLMANN, A.; STANISÇUASKI GUTERRES, S.; RODRIGUES E SILVA, P. M.; MARTINS, M. A.; FERRARINI, S. R.; BERNARDI, A. Pequi (Caryocar brasiliense Cambess)-loaded nanoemulsion, orally delivered, modulates inflammation in LPS-induced acute lung injury in mice. **Pharmaceutics**, v. 12, n. 11, p. 1075, 2020. DOI: https://doi.org/10.3390/pharmaceutics12111075

SALDANHA, A. A.; DO CARMO, L. F.; DO NASCIMENTO, S. B.; DE MATOS, N. A.; VELOSO, C. C.; CASTRO, A. H. F.; VOS, R. C. H. D.; KLEIN, A.; SIQUEIRA, J. M. D.; CAROLLO, C. A.; NASCIMENTO, T. V. D.; TOFFOLI-KADRI, M. C.; SOARES, A. C. Chemical composition and anti-inflammatory activity of the leaves of Byrsonima verbascifolia. **Journal of Natural Medicines**, v. 70, n. 4, p. 760-768, 2016. DOI: https://doi.org/10.1007/s11418-016-1011-3

SANNOMIYA, M.; FONSECA, V. B.; DA SILVA, M. A.; ROCHA, L. R. M; DOS SANTOS, L. C.; HIRUMA-LIMA, C. A.; BRITO, A. R. M. S.; VILEGAS, W. Flavonoids and antiulcerogenic activity from Byrsonima crassa leaves extracts. **J. Ethnopharmacol**., v. 97, n. 1, p. 1-6, 2005. DOI: https://doi.org/10.1016/j.jep.2004.09.053

SANNOMIYA, M.; RODRIGUES, C. M.; OLIVEIRA, G. C. A.; CARVALHO, J. C. S.; DA COSTA, L. S.; SPADARI, C. C.; FERREIRA, M. J. P.; VILEGAS, W.; ISHIDA, K. Galloylquinic acid derivatives from Byrsonima fagifolia leaf extract and potential antifungal activity. **Journal of Ethnopharmacology**, v. 297, 115534, 2022. DOI: https://doi.org/10.1016/j.jep.2022.115534.

SANNOMIYA, M.; DOS SANTOS, L. C.; CARBONE, V.; NAPOLITANO, A.; PIACENTE, S.; PIZZA, C.; SOUZA-BRITO, A. R. M.; VILEGAS, W. Liquid chromatography/electrospray ionization tandem mass spectrometry profiling of compounds from the infusion of Byrsonima fagifolia Niedenzu. **Rapid Commun. Mass Spectrom. RCM**, v. 21, n. 8, p. 1393-1400, 2007. DOI: https://doi.org/10.1002/rcm.2971

SANTOS, R. C.; KUSHIMA, H.; RODRIGUES, C. M.; SANNOMIY, MIRIAM; ROCHA, L. R. M.; BAUAB, T. M.; TAMASHIRO, J.; VILEGAS, W.; HIRUMA-LIMA, C. A. Byrsonima intermedia A. Juss.: gastric and duodenal anti-ulcer, antimicrobial and antidiarrheal effects in experimental rodent

models. **J. Ethnopharmacol**., v. 140, n. 2, p. 203-212, 2012. DOI: https://doi.org/10.1016/j.jep.2011.12.008

SANTOS, O. V.; CORREA, N. C. F.; CARVALHO JUNIOR, R. N.; COSTA, C. E. F.; MORAES, J. F. C.; LANNES, S. C. S. Quality parameters and thermogravimetric and oxidative profile of Muruci oil (Byrsonima crassifolia L.) obtained by supercritical CO2. **J. Food Sci. Technol.**, v. 38, p. 172-179, 2018. DOI: 10.1590/1678-457x.30616

SARAIVA, R. A.; MATIAS, E. F.; COUTINHO, H. D.; COSTA, J. G.; SOUZA, H. H. F.; FERNANDES, C. N.; ROCHA, J. B. T.; MENEZES, I. R. Synergistic action between Caryocar coriaceum Wittm. fixed oil with aminoglycosides in vitro. **Eur. J. Lipid. Sci. Technol**., v. 113 n. 8, p. 967-972, 2011. DOI: 10.1002/ejlt.201000555

SAWYER, D.; MESQUITA, B.; COUTINHO, B.; ALMEIDA, F. V.; FIGUEIREDO, I. B.; ELOY, L. **Perfil do Ecossistema: Hotspot de biodiversidade do cerrado**. SuperNova, 2018.

SCHIASSI, M. C. E. V.; SOUZA, V. R.; LAGO, A. M. T.; CAMPOS, L. G.; QUEIROZ, F. Fruits from the Brazilian Cerrado region: physico-chemical characterization, bioactive compounds, antioxidant activities, and sensory evaluation. **Food Chem**., v. 245, p. 305-311, 2018. DOI: 10.1016/j.foodchem.2017.10.104

SCARIOT, A.; RIBEIRO, J. F. **Boas práticas de manejo para o extrativismo sustentável da Cagaita**. Brasília, DF: Embrapa Recursos Genéticos e Biotecnologia, 72 p., 2015. DOI: https://ispn.org.br/site/wp-content/uploads/2018/10/BoasPraticasCagaita.pdf

SILVA, J. N. B.; GUIMARÃES, V. H. D.; MARINHO, B. M.; MACHADO, A. S.; SANTOS, A. R.; DAVID, L. R. S.; MELO, G. A.; DE PAULA, A. M. B.; SANTOS, S. H. S. Caryocar brasiliense Camb. fruit peel butanolic fraction induces antiproliferative effects against murine melanoma cell line. **Phytomedicine Plus**, v. 2, n. 2, 100273, 2022. DOI: https://doi.org/10.1016/j.phyplu.2022.100273.

SILVA, S. M. M.; SILVA, C. A. G.; FONSECA-BAZZO, Y. M.; MAGALHÃES, P.O.; SILVEIRA, D. Eugenia dysenterica Mart. Ex Dc. (Cagaita): planta brasileira com potencial terapêutico. **Infarma - Ciências Farmacêuticas**, v. 27, n. 1, p. 49-95, 2015. DOI: http://dx.doi.org/10.14450/2318-9312.v27.e1.a2015.pp49-95.

SILVA, R. S. M.; CHAVES, L. J.; NAVES, R. V. Caracterização de frutos e árvores de cagaita (Eugenia dysenterica DC.) no sudeste do estado de Goiás, Brasil. **Revista Brasileira de Fruticultura**, v. 23, n. 2, p. 330–334, 2001. DOI: https://doi.org/10.1590/S0100-29452001000200026

SPECIAN, A. F. L.; TUTTIS, K.; SERPELONI, J. M.; RIBEIRO, D. L.; NUNES, H. L.; TANGERINA, M. M. P.; SANNOMIYA, M.; VARANDA, E. A.; VILEGAS, W.; CÓLUS, I. M. S. Chemical characterization of Brazilian savannah Byrsonima species (muricis) and their impact on genomic instability and chemopreventive effects. **Mutation Research/Genetic Toxicology and Environmental Mutagenesis**, v. 887, 503586, 2023. DOI: https://doi.org/10.1016/j.mrgentox.2023.503586.

SOUZA, V. R.; ANICETO, A.; ABREU, J. P.; MONTENEGRO, J.; BOQUIMPANI, B.; DE JESUZ, V. A.; TEODORO, A. J. Fruit-based drink sensory, physicochemical, and antioxidant properties in the Amazon region: Murici (Byrsonima crassifolia (L.) Kunth and verbascifolia (L.) DC) and tapereba (Spondia mombin). **Food science & nutrition**, v. 8, n. 5, p. 2341-2347, 2020. DOI: 10.1002/fsn3.1520

SOUSA, M. S. B.; BUARQUE, D. S. **Chapter 25 - Murici (Byrsonima crassifolia (L.) Kunth): Antioxidant effects and application to aging**, Editor(s): Victor R. Preedy, Vinood B. Patel, Aging (Second Edition), Academic Press, p. 259-265, 2020. DOI: https://doi.org/10.1016/B978-0-12-818698-5.00025-0.

SOUZA, V. R.; PEREIRA, P. A. P.; QUEIROZ, F.; BORGES, S. V.; CARNEIRO, J. D. S. Determination of bioactive compounds, antioxidant activity and chemical composition of Cerrado Brazilian fruits**. Food Chem.,** v. 134, p. 381-386, 2012. DOI: 10.1016/j.foodchem.2012.02.191

STAFUSSA, A. P.; MACIEL, G. M.; BORTOLINI, D. G.; MAROLDI, W. V.; RIBEIRO, V. R.; FACHI, M. M.; HAMINIUK, C. W. I. Bioactivity and bioaccessibility of phenolic compounds from Brazilian fruit purees. **Future Foods**, v. 4, p. 100066, 2021. DOI: 10.1016/j.fufo.2021.100066

STALLINGS, A. F.; LUPO, B. M. P. Practical uses of botanicals in skin care. **Amercican Journal of Clinical Dermatology**, v. 2, n. 1, p. 36–40, 2009. DOI: PMC2958188

TEIXEIRA, B. E.; NASCIMENTO, S. T.; MÓS, J. V. N.; DE OLIVEIRA, E. M.; DOS SANTOS, V. M.; MAIA, A. S. C.; FONSÊCA, V. F. C.; PASSOS, B. M.; MURATA, L. S. The potential of natural shade provided by Brazilian savanna trees for thermal comfort and carbon sink. **Science of The Total Environment**, v. 845, 157324, 2022. DOI: https://doi.org/10.1016/j.scitotenv.2022.157324.

TORRES, L. R. O.; SANTANA, F. C.; SHINAGAWA, F. B.; MANCINI-FILHO, J. Bioactive compounds and functional potential of pequi (Caryocar spp.), a native Brazilian fruit: a review. **Grasas Aceites**, v. 69, n.2, p. 257, 2018. DOI: https://doi.org/10.3989/gya.1222172

TORRES, L. R. O.; DE SANTANA, F. C.; TORRES-LEAL, F. L.; DE MELO, I. L.; YOSHIME, L. T.; MATOS-NETO, E. M.; SEELAENDER, M. C. L.; ARAÚJO, C. M. M.; COGLIATI, B.; MANCINI-FILHO, J. Pequi (Caryocar brasiliense Camb.) almond oil attenuates carbon tetrachloride-induced acute hepatic injury in rats: Antioxidant and anti-inflammatory effects. **Food Chem. Toxicol**., v. 97, p. 205-216, 2016. DOI: https://doi.org/10.1016/j.fct.2016.09.009

VIEIRA, A. D. S.; BEDANI, R.; ALBUQUERQUE, M. A. C.; BISCOLA, V.; SAAD, S. M. I. The impact of fruit and soybean by-products and amaranth on the growth of probiotic and starter microorganisms. **Food Research International**, v. 97, p. 356-363, 2017. DOI: 10.1016/j.foodres.2017.04.026

VINHAL, G. L. R. R. B.; SANCHES, M. A. R.; BARCIA, M. T.; RODRIGUES, D.; PERTUZATTI, P. B. Murici (Byrsonima verbascifolia): A high bioactive potential fruit for application in cereal bars. **LWT**, v. 160, 113279, 2022. DOI: https://doi.org/10.1016/j.lwt.2022.113279.

VITEK, R; DE NOVAIS, L. M. R.; TORQUATO, H. F. V.; PAREDES-GAMERO, E. J.; DE CARVALHO, M. G.; DE SOUSA, P. T.; JACINTO, M. J.; DA SILVA, V. C. Chemical constituents and antileukemic activity of Eugenia dysenterica. **Natural Product Research**, v. 31, n. 16, p. 1930-1934, 2017.DOI: https://doi.org/10.1080/14786419.2016.1261343.

YAMAGUCHI, K. K.; LAMARÃO, C. V.; ARANHA, E. S.; SOUZA, R. O. S.; OLIVEIRA, P. D. A.; VASCONCELLOS, M. C.; LIMA, E. S.; VEIGA-JUNIOR, V. F. HPLC-DAD profile of phenolic compounds, cytotoxicity, antioxidant and anti-inflammatory activities of the amazon fruit Caryocar villosum. **Quim. Nova**, v. 40, n. 5, p. 483-490, 2017. DOI: https://doi.org/10.21577/0100-4042.20170028