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UNCONVENTIONAL FOOD PLANTS FOUND IN SANTA CATARINA STATE: nutritional and therapeutic potential

PLANTAS ALIMENTÍCIAS NÃO-CONVENCIONAIS ENCONTRADAS NO ESTADO DE SANTA CATARINA: potencial nutricional e terapêutico

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ABSTRACT
This work identified Unconventional Food Plants (UFP) in a rural area in Santa Catarina and described their nutritional and therapeutic properties. Data were collected in December 2016 in an area of agroecological garden and forest edge. All species founded were identified and had characteristics such as part used, habit, origin, use and nutraceutical potential analyzed according to specialized literature. Were identified 44 species from 29 families, the most frequent being Asteraceae. 75% of them have more than one part indicate for use. 81.32% of the species are herbaceous and 56.82% are exotic species. 54.54% of the species have another indication of use. The nutraceutical description of 88.36% of species was found in the literature although often incomplete.
KEYWORDS: Diversified food; Indications for use; Nutraceutical properties; PANCs; Spontaneous plants.

RESUMO
Este trabalho identificou Plantas Alimentícias Não-Convencionais (PANCs) em uma área rural de Santa Catarina e descreveu suas propriedades nutricionais e terapêuticas. Os dados foram coletados em dezembro de 2016 em uma área de horta agroecológica e orla florestal. Todas as espécies encontradas foram identificadas e tiveram características, como parte utilizada, hábito, origem, uso e potencial nutracêutico, analisadas de acordo com a literatura especializada. Foram identificadas 44 espécies de 29 famílias, sendo a mais frequente Asteraceae. 75% delas têm mais de uma parte indicada para uso. 81,32% das espécies são herbáceas e 56,82% são espécies exóticas. 54,54% das espécies possuem outra indicação de uso. A descrição nutracêutica de 88,36% das espécies foi encontrada na literatura, embora muitas vezes incompleta.
PALAVRAS-CHAVE: Alimentação diversificada; Indicações de uso; Propriedades nutracêuticas; PANCs; Plantas espontâneas.

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INTRODUCTION

Vegetable species used for human alimentation date back to the beginning of civilizations and were determinant for the subsistence of man over the years and the consolidation of life in community. For Polesi et al. (2017) it is extremely important to value the use of vegetables as a food source, as they provide vitamins, minerals, carbohydrates and fibers, in addition to phenolic compounds and essential nutrients for maintaining the body's health.

Brazil is the continental country with the greatest diversity of plant species in the world, with almost half (43%) of the plants, algae and fungi on the planet being endemic to the national territory (FIORAVANTI, 2016), this is only possible due to the its great territorial extension and the diverse climatic conditions existing in the country (PEREIRA; CARDOSO, 2012). Despite the great richness and what it represents, Brazilian biodiversity is little known and its use has been neglected, besides, many of these species are unknown and have desirable characteristics to be inserted in human food (CORADIN et al., 2011).

It is estimated that there are more than 10.000 botanical species with food potential in the country, but with the expansion of migration to the urban environment, some eating habits have been lost (FILHO, 2016). The term UFP (Unconventional Food Plants) (in Portuguese PANCs) refers to all plants that have one or more edible parts, whether spontaneous or cultivated, native or exotic that are not included in people's daily diet (KELEN et al., 2015). Also, according to Kinupp; Barros (2007), this concept also includes spices, condiments and aromatic species, as well as plants used as salt substitutes, such as sweeteners, meat tenderizers, food colors and in the manufacture of drinks, such as invigorating and infusions.

Terra and Vieira (2019) emphasize that some UFPs have nutritional contents equal to or higher than those found in vegetables, roots and fruits popularly used in the daily diet of Brazilian families. Parallel to that, Kinupp and Barros (2008) affirm that the identification of vegetable species rich in proteins and the incentive to the cultivation and consumption of these species can contribute to the reduction of nutritional deficiencies of low-income populations and provide nutritional alternatives for the general population.

In addition to the benefits evidenced for human consumption due to the diversification of the diet, Kinupp (2006) shows that UFP are also of great economic importance and can be an income option for small farmers. According to the author, the growing ecological awareness, the search for organic and easy-to-grow products in addition to their easy commercialization in fairs and markets indicates a great acceptance by the consuming public.

In order for large-scale UFP production to be possible, as well as the improvement of strategies for the conservation of genetic resources in their original locations and in teaching and research institutions, it is essential to characterize regional biodiversity to obtain knowledge about natural species (BIONDO et al., 2018). Currently, in Brazil, there are few scientific works and dissemination of these plants. Therefore, more research is needed to list the possible species and possibilities of use, contributing to their dissemination (BORGES; SILVA, 2018).

This work aimed to perform a species survey identified as Unconventional Food Plants (UFP) in a rural area in Santa Catarina state, Brazil, and to describe their nutritional and therapeutic properties.

MATERIAL AND METHODS

This study was carried out in a private area, occupied by a rural hotel in Lages, Santa Catarina (Latitude: -27.732647, Longitude: -50.203515). In this place there are a forest edge of Mixed Ombrophylous Forest and an agroecological garden used for environmental education purposes. The climate, according to the Köppen classification, is a humid subtropical mesothermal with cool summers, without a dry season, with severe frosts (Cfb), average altitude of 1000 meters, relative humidity of 79.3% and average annual rainfall of 1,200 mm.

The data were collected in December 2016. The sampling site covers the area of agroecological garden and forest edge, totaling 100 m². The selection was due to the great diversity of plants present. In this place, all plants were identified and cataloged. After identification, specialized bibliographies (KINUPP, LORENZI, 2014; MINISTÉRIO DA SAÚDE, 2002) were used to indicate the nutritional potential of the species. In addition, based on scientific articles, the nutritional benefits of described species have been reported.

RESULTS AND DISCUSSION

Were identified 44 species of UFP, distributed in 41 genera and 29 families (Table 1). The family with the largest number of species was Asteraceae with 9 species. The same family was reported as the most frequent by Barreira et al. (2015) in a diversity study of UFP in a rural area in Viçosa, Minas Gerais, Brazil. Among the parts used for consumption, 27.27% (12) of the species have only one part indicated, while 75.00% (33) have more than one part indicated. 65.90% (29) of the plants have their leaves indicated for use, 47.72% (21) the branches, 25.00% (11) the flowers, 15.90% (7) the fruits, 13.63% (6) the roots and 2.27% (1) other parts or even the entire plant. Vieira e Milward-de-Azevedo (2019), in a study with UFP and medicinal plants in Petrópolis-RJ, Brazil, attested that most species have their leaves and flowers used.

Table 1: Identification and parts used of Unconventional Food Plants (UFP) found in a rural area of Santa Catarina state, Brazil, 2020.

Family	Specie	PU	HB	OR	OU
Amaranthaceae	*Alternanthera philoxeroides*	R, L	H	N	-
	Alternanthera tenella	R, L	H	N	M
	Amaranthus deflexus	R, L	H	N	-
Amaryllidaceae	*Allium tuberosum*	L, FL	H	E	-
	Nothoscordum gracile	L, B	H	N	O
Anacardiaceae	*Schinus terebinthifolius*	FR	SH	N	O, M
Apiaceae	*Cyclospermum leptophyllum*	R, L	H	N	-
	Foeniculum vulgare	R, L, ST	H	E	M

Aquifoliaceae	*Ilex paraguariensis*	R, L	SH	N	M
Araceae	*Colocasia esculenta*	RO	H	E	O, M
Araucariaceae	*Araucaria angustifolia*	S, ST	SH	N	TI, M
Asteraceae	*Conyza bonariensis*	R, L	H	N	-
	Erechtites valerianifolius	R, L	H	N	-
	Galinsoga parviflora	R, L	H	E	-
	Hypochaeris radicata	L, FL	H	E	-
	Lactuca canadensis	L	H	E	-
	Lactuca serriola	R, L	H	E	-
	Sonchus oleraceus	R, L	H	E	M
	Taraxacum officinale	R, L, FL	H	E	M
	Vernonanthura phosphorica	R, L	SH	N	AP, M
Balsaminaceae	*Impatiens walleriana*	FL	H	E	O
Basellaceae	*Anredera cordifolia*	L, RO	H	N	-
Brassicaceae	*Coronopus didymus*	R, L	H	N	M
Cactaceae	*Opuntia ficus-indica*	FR, R	SH	E	O, M
	Pereskia aculeata	R, FL, FR	SH	N	O, M
Cucurbitaceae	*Sechium edule*	R, RO, FR	H	E	M
Cyperaceae	*Cyperus esculentus*	RO	H	E	-
Hypoxidaceae	*Hypoxis decumbens*	WP	H	N	-
Lamiaceae	*Stachys byzantina*	L	H	E	O, M
Melastomataceae	*Aciotis circaeifolia*	R, L	H	N	-
Nyctaginaceae	*Boerhavia diffusa*	R, L	H	E	-
Oxalidaceae	*Oxalis latifolia*	L	H	E	-
Passifloraceae	*Passiflora caerulea*	FR	H	N	O, M
Plantaginaceae	*Plantago major*	L, FL	H	E	M
Polygonaceae	*Rumex obtusifolius*	L	H	E	-
	Rumex acetosa	L	H	E	
Portulacaceae	*Portulaca oleracea*	R, L	H	N	M
Rubiaceae	*Gardenia jasminoides*	FL	SH	E	O

Solanaceae	*Solanum americanum*	R, FR	H	N	M
Theaceae	*Camellia japonica*	L FL	SH	E	CI, M
Tropaeolaceae	*Tropaeolum majus*	L FL, FR	H	E	O, M
Xanthorrhoeaceae	*Hemerocallis x hybrida*	FL	H	E	O
Zingiberaceae	*Curcuma longa*	RO	H	E	O, M
	Hedychium coronarium	RO, FL	H	E	O

Fonte: elaborada pelos autores, 2020.

Caption: PU: Part used; HB: Habit; OR: Origin; OU: Other uses; B: Bulb; ST: Steam; L: Leaf; FL: Flower; FR: Fruit; WP: Whole plant; RO: Root; S: Seed; H: Herbaceous; SH: Shrub; N: Native; E: Exotic; O: Ornamental; M: Medicinal, TI: Timber industry; AP: Apiculture; CI: Cosmetic industry.

Regarding the habit of the plants found, 81.82% (36) are herbaceous, 11.36% (5) shrubby and 6.82% (3) arboreal. The predominance of plants with herbaceous habit justifies the widespread use of leaves in the preparation of food, due to the easy access to these structures (SILVA et al., 2012). 56.82% (25) are exotic species and 43.18% (19) are species native to Brazil. In addition to the potential for food use, 54.54% (24) of the plants found have a description of some other form of use, 34.09% (15) have medicinal potential, 24.54% (13) have ornamental potential and 6.82% (3) have potential for use in the timber, cosmetic or beekeeping industry.

In many countries, some species considered UFP in Brazil are seen as weeds and, therefore, there are no greater records on their use (KINUPP; LORENZI, 2014). However, many works have shown the potential of some species as medicinal and its nutritional value (PINTO et al., 2018).

In the Amaranthaceae family, the *Alternanthera philoxeroides* species presents chemical compounds with antitumor and antiviral action (FANG et al., 2009) due to the presence of glycosylated flavonoids and betalains (RATTANATHONGKOM et al., 2009). *Alternanthera tenella* has a high range of minerals, including potassium, manganese, zinc, calcium, phosphorus, iron and others (PATIL; KORE, 2015). This species is reported in the literature for having antioxidant potential (RODRIGUES-BRANDÃO et al., 2014) and antitumor effects (GUERRA et al., 2003). *Amaranthus deflexus* is reported with a high concentration of proteins, fats and minerals (calcium, potassium, magnesium, phosphorus and iron) (AMAYA-FARFAN et al., 2005; JEMÉNEZ-AGUILAR; GRUSAK, 2017). Terzieva et al. (2019) describe that this plant extract has antimicrobial activity against several microorganisms.

In the Amaryllidaceae family, the species *Allium tuberosum*, also known as Chinese chive, is an important source of calcium, potassium and zinc (KHABID et al., 2014), as well as vitamin A, C and dietary fiber (HONG et al., 2016). The seed of this species also has a peptide responsible for antioxidant activity, which influences to inhibit the growth of Gram-negative and Gram-positive bacteria (HONG et al., 2014). According to a study conducted by Tang et al. (2017), this species is traditionally used to treat abdominal pain, diarrhea and sexual dysfunction, has an anti-diabetic and hepatoprotective effect.

Schinus terebinthifolius of the Anacardiacea family is rich in vitamins and promotes the reduction of blood clots, being a vasodilator. It also has the ability to stimulate the production of endorphins in the brain and can assist in the treatment of obesity, as it reduces appetite. With nutritional content, 27.5 μg/g of carotenoids, 17.3 mg/100g of vitamin C (PAGANI et al., 2014)

and 26.25% of protein (TLILI et al., 2018). Its antimicrobial and antioxidant potential is also reported (DANNENBERG et al., 2016). Traditionally, in Brazilian medicine is used to treat inflammation, ulcers and tumors. In research by Fedel-Miyasato et al. (2014), point out that the methanolic extract of the leaves can act as a chemopreventive compound, promoting integrity of the cell genome by demutagenic and bioantimutagenic activities. Piccinelli et al. (2015) point out that the essential oil extracted from the fruits provides the ability to act as anti-inflammatory, antidepressant and anti-hyperalgesic against mechanical hyperalgesia.

Cyclospermum leptophyllum of the Apiaceae family is reported as having several chemical constituents acting as antibacterial (VERMA et al., 2015). Yildirim et al. (2018) describes that the species can help in the treatment of breast cancer. *Foeniculum vulgare*, from the same family, has antioxidant, antitumor, chemopreventive, cytoprotective, hepatoprotective, hypoglycemic and estrogenic activities. The species is also effective against numerous infectious diseases of bacterial, fungal, viral, mycobacterial and protozoal origin (BADGUJAR et al., 2014). The same authors describe that the species is rich in fibers and vitamins, constituting an important source for the human diet.

Ilex paraguariensis, of the Aquifoliaceae family, well known for the use of leaves in *chimarrão*, a traditional drink from the State of Rio Grande do Sul is indicated for presenting polyphenol and carotenoid compounds that have protective effects against the development of chronic diseases, such as cardiovascular problems (CARDOZO JUNIOR; MORAND, 2016), Alzheimer's disease (BORTOLI et al., 2018) and diabetes (FERNANDES et al., 2016). Studies show it as a good source for obtaining caffeine, which helps in suppressing the accumulation of lipids and gaining body weight, as it acts in the modulation of lipogenic gene expression (GAN et al., 2018; ZAPATA et al., 2019). Santos et al. (2015) describes that in addition to the anxiolytic and stimulating effects, *Ilex paraguariensis* also has a neuroprotective action, being able to prevent memory deficit.

Nutritionally, Igbabul et al. (2014) describe that the tubers of *Colocasia esculenta*, of the Araceae family, contain easily digestible starch and have substantial amounts of protein, fiber, vitamin C, thiamine, riboflavin, potassium, sodium, phosphorus, magnesium, calcium and niacin. The leaves contain iron, folic acid and beta-carotene. Simsek and Nehir El (2015) describe that the amount of starch provided by this species enables its use in the diet, especially for diabetic people. *Colocasia esculenta* has several important phytochemicals, such as alkaloids, glycosides, flavonoids, saponins and others. This chemical constitution found in the plant can act to reduce headache, support the treatment of congestive heart failure and in the prevention of cell damage, in addition to having an efficient anti-inflammatory, antimicrobial, antifungal, antibacterial and antihypertensive action (KESHAV et al., 2019).

Araucaria angustifolia of the Araucariaceae family, provides the seed commonly called pine nuts, and is widely consumed during the winter. According to a literature review conducted by Peralta et al. (2016), the seed has a considerable content of lipids, fibers, proteins, carbohydrates, sugar, fatty acids and amino acids. The species also has the potential to treat rheumatism, anemia, fatigue, respiratory infections and other diseases.

In the Asteraceae family, *Conyza bonariensis* has high amount of saponins, organic acids, volatile organic acids, limonene and karyophylene oxide (SILVA et al., 2018). Thabit et al. (2014) describe that the species has different phytochemical groups such as alkaloids, phenolic acids, flavonoids and others, which gives *Conyza bonariensis* anti-inflammatory, antinociceptive, antipyretic, anti-rheumatic and antioxidant potential. *Erechtites valerianifolius* has a caloric value of 29.2 kcal in 100g and high concentrations of β-carotene, K, Ca, Fe and Mg (BARREIRA et al., 2019), in addition to 23% protein content (KINUPP; BARROS, 2008). According to

Puspaningtyas et al. (2018) this species, which is commonly found in Indonesia, has antioxidant, antifungal, antibacterial, antiplasmodial and cytotoxic activities, and is also used to treat fever, diarrhea, tonsillitis, wounds and eczema.

Also from the Asteraceae family, the *Galinsoga parviflora* species commonly used to relieve toothache, cold and flu, treatment of cold sores and bleeding. It has a high level of vitamin C, considerable levels of minerals, such as calcium and magnesium, in addition to proteins. To date, seven categories of compounds found in the species have been classified, namely flavonoids, aromatic esters, diterpenoids, derivatives of caffeic acid, steroids, derivatives of phenolic acid and various compounds. These confer the antibacterial, antifungal, antioxidant, nematicide, anti-inflammatory, cytotoxic, α-glucosidase, lipoxygenase, hepatoprotective and hypoglycemic activities pharmacological properties (ALI et al., 2017).

According to Jumana et al. (2015), the species *Hypochaeris radicata* is prescribed by local healers from some tribes, for the treatment of inflammation and various diseases. In this study, they determined that two compounds found plants (confertin and scopoletin) exhibit anti-inflammatory and antioxidant action. It is rich in calcium, copper, sulfur, chloride (MOORCROFT et al., 1997) and proteins (17.6%) (SIMPSON, 2000). *Lactuca canadenses* presents 1.3% of proteins (SILVA et al., 2018), in addition to anthocyanins, coumarin, flavonoids, fructans and sesquiterpenlactones (TEIXEIRA, 2018). *Sonchus oleraceus* is reported to have 17.50% protein and 317.3 kcal/100g (JIMOH et al., 2011). Li et al. (2017) describes that the aqueous extract has an anti-inflammatory effect and Mawalagedera et al. (2016) states that the leaves are especially rich in phenolic compounds and have antioxidant activity. Other studies point out antitumor effects (HUYAN et al., 2016), nephroprotective (TORRES-GONZÁLEZ, 2018) and prevent or delay liver dysfunction (CHEN et al., 2019). *Taraxacum officinale* has 15.48% protein content, vitamins A and C (ESCUDERO et al., 2003), in addition to minerals, carotenoids, terpenoids, flavonoids, polyphenols and inulin (MARTINEZ, 2015). Pharmacologically it has antidiabetic (WIRNGO et al., 2016), antioxidant and hepatoprotective properties, in addition to anti-influenza, anti-fertility, anti-retroviral (IVANOV, 2014) and antimicrobial activities (AROKIYARAJ et al., 2015).

In the *Anredera cordifolia* species of the Basellaceae family, 21.05% protein content, 6.3% fiber, 3.2% lipids, 46.09% carbohydrates were identified, in addition to high levels of phosphorus and potassium (SOUZA, 2014). Researches indicate that the species' action is efficient for reducing the level of total cholesterol, triglycerides and LDL (LESTARI et al., 2015), as well as a potential anti-cancer agent (YULIANI et al., 2015), antihypertensive (GARMANA et al., 2016), anti-inflammatory (LAKSMITAWATI et al., 2017) and helps to improve healing process (YUNIARTI; LUKISWANTO, 2017).

Studies show that the species *Coronopus didymus*, of the Brassicaceae family has 28.17% of proteins (KINUPP; BARROS, 2008), in addition to volatile phytochemicals in the aerial parts and roots (NOREEN and FARMAN, 2016) and phenolic content responsible for antioxidant activity (NOREEN et al., 2017). Among the pharmacological actions provided by the plant have anti-inflammatory activity (PRABHAKAR et al., 2002), anticancer (NOREEN et al., 2016), allergenic, antiviral, antimicrobial, antifungal and helps in healing process (ALVAREZ, 2019).

In a literature review on the species *Opuntia ficus-indica* (Cactaceae), El-Mostafa et al. (2014) presents several important bioactive compounds linked to health and nutrition, including polyphenols, vitamins, fatty acids, minerals, amino acids. The species also has proteins in its fruits (1.69%), stem (3.48%) (CHO et al., 2009) and seeds (13.62%) (NASSAR et al., 2008). Besides, biological activities like antioxidant, anti-inflammatory, antimicrobial, anti-cancer, anti-ulcer, neuroprotective, hypoglycemic and hypolipidemic actions (EL-MOSTAFA et al., 2014). *Pereskia*

aculeata, from the same family is commonly known as "ora-pro-nobis", it is a source of proteins, fibers and minerals, with 29% of proteins, in addition to the presence of vitamin C, carotenoids, lycopene, carotene, oxalic acid, nitrate, saponins, phenolic compounds and trypsin inhibitor (ALMEIDA et al., 2014). Among the actions found in the species are the analgesic potential (PINTO et al., 2015a), anti-inflammatory (PINTO et al., 2015b), healing (PINTO et al., 2016), antimicrobial, antifungal and antioxidant (SOUZA et al., 2016).

From the Cucurbitaceae family, the species *Sechium edule* is reported to have a high nutritional potential with proteins, vitamins A and C, carotenes, tannins and oxalates, fiber, minerals such as iron and calcium, polyphenols (BELLUR NAGARAJAIAH; PRAKASH, 2014), starch and polysaccharides (SHIGA et al., 2015). Besides, presents bioactive potential, antioxidant activity and inhibits carbohydrate hydrolyzing enzymes (LOIZZO et al., 2016). Its sprouts can prevent and remedy the accumulation of fat in the liver, consequently affecting the development of obesity, hypertension and diabetes (WU et al., 2014) and the roots have antihypertensive activity (LOMBARDO-EARL et al., 2014).

Gambo and Da'u (2014) describe that the species *Cyperus esculentus* (Cyperaceae) is rich in minerals, predominantly phosphorus and potassium, protein content, vitamins C and E, carbohydrates, lipids, fibers, amino acids and polyphenols. Regarding the presence of phytochemicals, the authors report that alkaloids, glycosides, cyanogens, resins, tannins, sterols and saponins are found. Pharmacologically it contributes to the reduction of cholesterol, risks of coronary diseases, diabetes, asteriosclerosis, cancer development, besides being highly energetic and diuretic. Also it has antimicrobial, antifungal and antioxidant action.

For the species *Hypoxis decumbens* (Hypoxidaceae) there are few studies found related to nutrition, with no studies on the medicinal action of the species. Kinupp and Barros (2008) point out that the plant has a protein (8.6%), phosphorus (400 mg.100 g-1) and zinc content (9.4 mg.100 g-1).

A study by Silva et al. (2018) on the nutritional evaluation of unconventional vegetables, shows that the species *Stachys byzantina* (Lamiaceae) has vitamin C, carbohydrates, lipids, proteins, high fiber content, minerals (potassium, calcium, magnesium, phosphorus, sulfur, copper, iron, manganese, zinc and boron) and high content of phenolic compounds which gives antioxidant activity. Pharmacologically, there are few reports on the use of this species for health, and it is popularly used mainly to treat pulmonary problems (NEDOPETALSKI; KRUPEK, 2020). Manafi et al. (2010) demonstrate that the essential oil of the leaves has antimicrobial activity against several microorganisms.

Mishra et al. (2014) and Beegum et al. (2014) describe that the species *Boerhavia diffusa* (Nyctaginaceae) is an excellent nutritional source, as it contains amino acids, fatty acids, vitamins C and B complex, mineral carbohydrates and proteins. Due to its high levels of flavonoids, both studies show that the plant has antioxidant activity, in addition to other medicinal attributes, such as anti-inflammatory, antispasmodic, analgesic, anticancer, antimicrobial, antifungal, diuretic and with renal and antidiabetic activity.

Oxalis latifolia of the Oxalidaceae family has protein, fiber (VELÁZQUEZ-IBARRA et al., 2016), tannins, alkaloids, phenols, saponins, flavonoids, glycosides and potential to reduce sugar. Due to the range of compounds found, the species acts as an antibacterial and has antioxidant activity (KRISHNAN et al., 2019).

For the species *Passiflora caerulea* (Passifloraceae) studies show that high protein content (23.8%) and fiber (32.5%) are found in the seed (QUIROGA et al., 2000). Other studies indicate that the juice provides phenolic compounds, epigallocatechin gallate, lycopene, carotenoids, quercetin, α-carotene, β-carotene and provitamin A (REIS et al., 2018). Among its health benefits

are the ability to act as anticonvulsants, analgesic, anti-toxicity, anti-inflammatory and antipyretic (AL-ASKARY et al., 2017).

Bezerra et al. (2017) conducting a study on PANCs points out that the species *Plantago major* (Plantaginaceae) has proteins (21.4%), lipids (6.9%) and fibers (28.6%). The vegetative and reproductive parts of the plant can be consumed and according to Haddadian et al. (2014) there are many contributions to health, such as cancer prevention and tumor formation, for the treatment of infections, respiratory, cardiological, digestive and circulatory problems. In addition to these benefits, Caro et al. (2018) reports that due to its phenolics, flavonoids and tannins, the species has medicinal potential for treating anxiety, stress and insomnia.

From the Polygonaceae family, the species *Rumex obtusifolius* can be considered a great source of essential nutrients for the diet, such as lipids, proteins and carbohydrates. In addition, the presence of bioactive compounds, such as phenolics, flavonoids and flavonols, gives the species antioxidant activity (SGANZERLA et al., 2019). Studies demonstrate the potential for treating diabetes (AGHAJANYAN et al., 2018), burns and boils, blisters, wounds, liver tumors, dermatitis, bruises, jaundice and fever (MISHRA et al., 2018). The *Rumex acetosa* species proves to be a good nutritional source, as it has fibers, proteins, lipids, vitamin C (VIANA et al., 2015), several minerals (calcium, magnesium, iron, potassium and sodium) and amino acids. In the chemical constitution, approximately 50 secondary metabolites are reported, such as anthraquinones, polyphenols and naphthalenes (BELLO et al., 2019). The same study describes that among the pharmacological actions linked to the use of this plant are the antioxidant, antiviral, antibacterial, antifungal, antiulcer, anti-inflammatory, antipyretic and antiproliferative activities.

Portulaca oleracea (Portulacaceae) exhibit proteins, vitamins, rich in minerals (phosphorus, manganese, iron, selenium, calcium), polysaccharides, fatty acids, amino acids (isolecine, proline, leucine, lysine, valine, phenylalanine and others), sterols, flavonoids, alkaloids and terpenoids. Among the medicinal actions are antioxidant, neuroprotective, antidiabetic, antimicrobial, anti-inflammatory, antiulcerogenic and hepatoprotective activities (ZHOU et al., 2015). Zhao et al. (2017) demonstrates that a polysaccharide (POL-P3b) found in the species, has antitumor activity, thus being a potent nutritional supplement for oncotherapy.

The main compounds found in the *Gardenia jasminoides* (Rubiaceae) species are iridoides, glycosides, triterpenoids, organic acids and volatile compounds. Nutritionally, there is a lack of studies that explain whether vitamins, minerals, proteins and others are present. However, due to the bioactive compounds present in *G. jasminoides*, many studies point out the antioxidant activities, improvement of insulin sensitivity, anti-inflammatory, prevention of arteriosclerosis and thrombosis, antidepressant, anti-gastric, anti-angiogenic, antidiabetic, antiarthritic, antiallergic and for improvement sleep quality (SUNG et al., 2014; XIAO et al., 2017).

Macuean and Poll (2002) state that in *Solanum americanum* species, of the Solanaceae family, a high amount of proteins, calories, fibers, vitamin C and of the B complex and minerals such as calcium and iron are found. In addition, several bioactive compounds, such as alkaloids, coumarins, flavonoids, steroids, lactones, saponins and others are reported (SILVA et al., 2017). Pharmacologically, antimicrobial (USMAN et al., 2018), antidiabetic (KADIMA et al., 2016), hepatoprotective, diuretic, anti-inflammatory, antioxidant, antipyretic, antitumor, for the treatment of skin and mucous ulcers, liver cirrhosis, edema and stomach inflammations activities was found (AKBAR, 2020).

The species *Camellia japonica* (Solanaceae) has been extensively studied for its pharmacological properties, as several bioactive components are found in the leaves, seeds and

flowers, such as catechin, epicatechin, protocatechuic acid, α-tocopherol, ascorbic acid, gallic acid and quercetin (LEE, 2011; LI et al., 2014). Among the pharmacological attributions are the anti-aging capacity (MIZUTANI; MASAKI, 2014), antioxidant, reduction of neurodegenerative diseases, such as Alzheimer's disease (JEONG et al., 2010), anti-inflammatory in human corneal epithelial cells and dry eye (LEE et al., 2017) and treatment of cardiovascular diseases associated with endothelial dysfunction and asterosclerosis (PARK et al., 2016).

Lima Franzen et al. (2016) analyzing the flower petals of *Tropaeolum majus* (Tropaeolaceae), describe that it has protein (1.48%), fiber (0.77%), carbohydrate (4.73%) and caloric value of 34.32 kcal/100g (LIMA FRANZEN et al., 2016). Brondani et al. (2016) report that the species also contains biologically active compounds, such as flavonoids, glucosylonates, fatty acids, essential oil, chlorogenic acid, amino acids, carotenoids and cucurbitacins. Among the traditional uses are the treatment of diseases of the skin, eyes, furunculosis, acne, psoriasis, eczema and lung diseases. The diuretic, antihypertensive, antimicrobial, antioxidant actions (BRONDANI ET al., 2016) and potential on obesity treatment (KIM et al., 2017) have already been proven.

Protein, fibers, carbohydrates, L-ascorbic acid, carotenoids and anthocyanins are found in the species *Hemerocallis x hybrida* of the family Xanthorrhoeaceae, as well as antioxidant capacity (STEFANIAK; GRZESZCZUK, 2019). However, further studies on the therapeutic activities of the plant are needed.

From the Zingiberaceae family, *Curcuma longa* presents vitamin C, beta-carotene, polyphenol, fatty acid, mineral and essential oil with a very rich composition of phenols (IKPEAMA et al., 2014). Among the biological activities of the species are anti-inflammatory, antioxidant, anti-protozoal, nematocidal, antibacterial, antivenom, antimutagenic and antitumor activities. In addition, curcumin can decrease high cholesterol levels and assist in the treatment of liver damage (ARAÚJO; LEON, 2001). *Hedychium coronarium*, from the same family have a high-water content and lower amounts of lipids, carbohydrates, ash, proteins and fibers (ASCHERI et al., 2010). In the chemical composition, several bioactive compounds are found, which are responsible for anti-inflammatory, analgesic, antibacterial, cytotoxic, chemopreventive, antiallergic, antifungal, anti-angiogenic, neuro-pharmacological, fibrinogenolytic, coagulant, larvicidal, anthelmintic and hepatoprotective (CHAN; WONG, 2015).

Despite the presence of nutraceutical information for 88.36% of the species (39), many reports are incomplete and need further study. In addition, studies on the benefits of five species mentioned in the research such as: *Nothoscordum gracile*, *Lactuca serriola*, *Vernonanthura phosphorica*, *Impatiens walleriana* and *Aciotis circaeifolia*, described as food, don´t have registration of their chemical composition, both for nutritional and medicinal purposes.

CONCLUSIONS

It is concluded that the food species present in the area mostly have an indication of the use of leaves, branches and flowers, are herbaceous, exotic and with potential for use beyond to alimentation. They have a huge nutritional and medicinal potential however, further studies are needed on its nutraceutical information to consolidate them as common food options at the consumer's table, thus contributing to a more diverse and nutritious diet.

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