CHAPTER 27

Bioactive compounds and biological actions in edible flower species

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ABSTRACT

Introduction: Edible flowers are used in food in many regions, and over the years, their consumption has increased, as they add color and beauty to dishes, they also contribute to human health, as they are rich in bioactive compounds. Objective: Thus, the objective was to survey the literature on bioactive compounds from edible flowers, as well as expose some of biological activities. Methodology: A search for scientific research was carried out through electronic databases: SciElo, PubMed, Lilacs and Web of Science, using the descriptors: Flores comestíveis "Edible flowers", Compostos bioativos "Bioactive compounds" and Fitoquímicos "Phytochemicals", combined by Boolean operator "AND". We used studies available in full, in Portuguese or English, which contained two of the three descriptors. Results: Studies have shown that edible flowers have several bioactive compounds, highlighting the presence of flavonoids, anthocyanins, carotenoids, and phenolic acids that have biological actions (anti-inflammatory, antioxidant, anti-hyperglycemic, anti-obesity, antibacterial, for example). Conclusion: The physical-chemical and nutritional characterization studies have been growing, but there is still a lack of studies on native species in Brazil, to know their biological properties and encourage both the consumption and the production of edible flowers.

1 INTRODUCTION

Flowers are the structures responsible for plant reproduction, thus having characteristics such as color, aroma and appearance that are attractive to pollinators. Botanically, those that can form flowers and fruits, such as rose and mango , are classified as *angiosperms* . (FELIPPE, 2004) .

To be considered complete flowers, they need to be formed by sepals, which are sterile leaves, usually green in color, which in turn form a set called calyx; Petals, which are sterile leaves, usually colorful and showy, and their set is called the corolla; Stamens are the male fertile leaves, responsible for the production of pollen, which together form the androecium; The carpels represent the fertile female leaves, forming the gynoecium. Each carpel has an ovary that contains the eggs and that, after each fertilization, will form the fruit; Finally, the stylet, a tubular part that has on its surface a structure called stigma, the place where pollen is received (IGLESIAS; CHAGAS; THOMAZ; (ORG), 2015) .

Floraphagy is the act of ingesting flowers, a common habit in the diet of the population. Cauliflower (*Brassica oleracea var. botrytis*), artichoke (*Cynara cardunculus var. scolymus)* and broccoli (*Brassica oleracea var. italic*). Other flower species also frequently found are nasturtium (*Tropaeolum majus*) , pansy (*Viola tricolo*) and roses (FERNANDES; CASAL; PEREIRA; SARAIVA *et al.* , 2016) . Flowers make up the culinary culture in different regions of the planet. It is common to find them in recipes such as daylilies (*Hemerocallis disticha)* in China (JIAYI; JINYAN; JI'ER; XIAOQIN *et al.* , 2009) , papaya flowers

(*Carica papaya*) in India (DEKA; NATH, 2021) , bougainvillea hybrids (*Bougainvillea hybrida*) in Thailand (KAISOON; SIRIAMORNPUN; WEERAPREEYAKUL; MEESO, 2011) , pumpkin flowers (*Curcubita pepo*) in Mexico (SOTELO; LOPEZ-GARCÍA; BASURTO-PENÃ, 2007) ; and nasturtium (*Tropaeolum majus*) in Brazil (BARROS; ANDRADE; PEREIRA; DE OLIVEIRA *et al.* , 2020) .

The proper form of ingestion of each species of flower is different. Some species can be eaten whole, but in other cases, the consumption of certain parts is not recommended, such as roses and tulips, in which only the petals should be ingested (MLCEK; ROP, 2011) . The origin of the flowers is a determining factor for the safety of consumption, as it is explicitly recommended not to ingest flowers from florists, since they use fertilizers, herbicides and pesticides, which are harmful to our health and can cause poisoning. Thus, the purchase of flowers for consumption should only be from producers who adopt appropriate production methods (FERNANDES; CASAL; PEREIRA; SARAIVA *et al.* , 2016; LARA-CORTÉS; OSORIO-DÍAZ; JIMÉNEZ-APARICIO; BAUTISTA-BAÑOS, 2013) .

Edible flowers are widely used in gastronomy due to their relevance in the aesthetic composition of dishes, giving them surprising colors and shapes, in addition, they are elements that give different flavors and aromas. Its use varies between salads, jellies, desserts, drinks , oils and soups (FERNANDES; CASAL; PEREIRA; SARAIVA *et al.* , 2016) . Edible flowers have vitamins, minerals, proteins, amino acids and bioactive compounds that bring benefits to human health. They are mostly made up of water, characterizing themselves as a low-calorie option associated with the intake of the aforementioned nutrients. (LARA-CORTÉS; OSORIO-DÍAZ; JIMÉNEZ-APARICIO; BAUTISTA-BAÑOS, 2013) .

Bioactive compounds are the secondary metabolites of plants, responsible for their protection, coloring and attraction of pollinators and their levels vary according to each species, soil type, climate and flowering period (BORELLA; MARTINAZZO; AUMONDE; AMARANTE *et al.* , 2021; FERNANDES; CASAL; PEREIRA; SARAIVA *et al.* , 2016) . Among the secondary metabolites found are carotenoids and flavonoids which, in addition to being protective factors for plants, bring benefits to human health associated with their antioxidant function, which protects cells from oxidative damage , as well as anti-inflammatory and antitumor functions, correlated reducing the incidence of chronic non-communicable diseases (NCDs) and cardiovascular diseases (PEREIRA; CARDOSO, 2012) .

Given the above, the present study aimed to identify , through the review of specialized literature, the main edible flowers, their potential bioactive compounds and their possible biological actions.

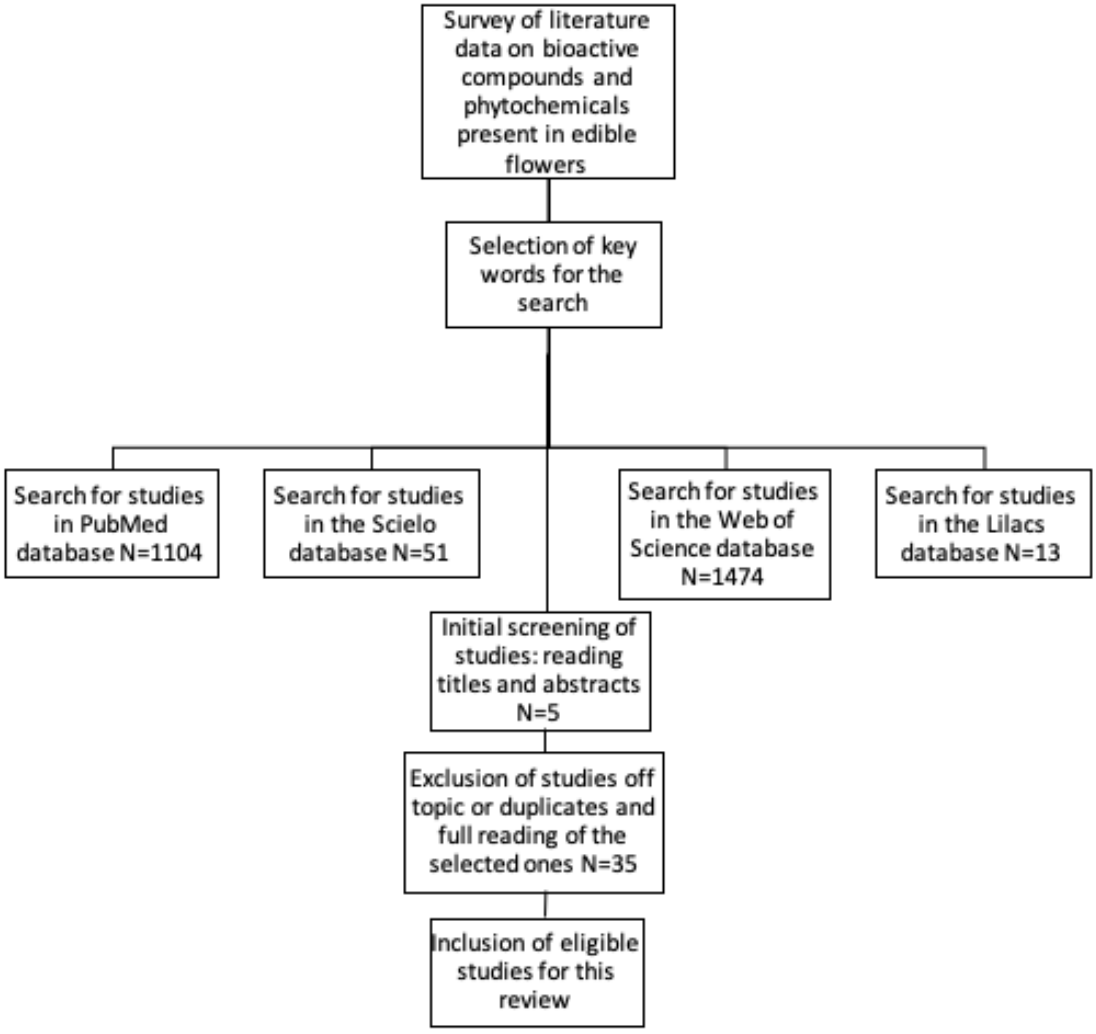
2 METHODS

This is a literature review, with a qualitative approach. Searches for scientific research were carried out through the electronic databases: Web of Science, Scielo, PubMed and Lilacs using descriptors: Edible flowers “edible flowers”, bioactive compounds “bioactive compounds” and phytochemicals “phytochemicals”, combined by the Boolean operator “AND”.

The inclusion criteria for the articles were: studies available in full, in Portuguese or English and containing two of the three descriptors. Studies that did not address the topic and that were not in the defined languages were excluded. Figure 1 was elaborated from the results found in each database, using the descriptors alone and in combination.

The selection of articles was made by reading the titles, and checking the two descriptors, in which 50 studies were pre-selected. Of these studies, which were duplicated, and 15 were excluded, leaving 35 studies to be read in full, and only 12 were elected to produce this work.

Figure 1: Study design



3 RESULTS AND DISCUSSION

Several studies with edible flowers in which phytochemical evaluations, physicochemical characterizations and antioxidant activity were performed are available in the literature. The most studied bioactive compounds were flavonoids, carotenoids and anthocyanins. It is observed that few of these studies were carried out in Brazil.

In table 1 , we present the species of edible flowers, their main bioactive compounds and their respective biological activities. Among the most common activities, the antioxidant action stands out.

Table 1 . Edible flower species, their bioactive compounds and their respective biological activities.

Popular name	Botanical name	Bioactive compound	Activity biological	Reference
Perfect love	*viola x wittrockiana tricolor viola*	flavonoids anthocyanins carotenoids hydrolysable tannins	antioxidant anti-inflammatory anticancer antihyperglycemic anti-obesity cardioprotective antiviral antibacterial antifungal	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; FERNANDES; CASAL; PEREIRA; MALHEIRO *et al.* , 2019; FERNANDES; CASAL; PEREIRA; PEREIRA *et al.* , 2019; FERNANDES; RAMALHOSA; BAPTISTA; PEREIRA et al., 2019; FERNANDES; RAMALHOSA; BAPTISTA; PEREIRA *et al. al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009)
gladiolus flowers	*Gladiolus x grandiflorus*	anthocyanins flavonoids	antioxidant anti-obesity cardioprotective antibacterial antiviral antifungal	(JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; SOUZA; JUNG; BENEDICTO; BOSCO, 2021)
false acacia rose	*Robinia hispida*	anthocyanins flavonoids	Antioxidant hypoglycemic anti-obesity cardioprotective antiviral antibacterial antifungal	(HALLMANN, 2020; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009)
bastard acacia	*Robinia pseudoacacia*	flavonoids	cardioprotective antioxidant antifungal antibacterial antiviral	(HALLMANN, 2020; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002)
pumpkin flower	*cucurbita maxima*	anthocyanin flavonoid carotenoid terpenoid	hypoglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antiviral antibacterial antifungal	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; GHOSH; RANA, 2021; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
blue agave flower	*Salmian agave*	carotenoids flavonoids phenolic acids	antioxidant cardioprotective antiviral antibacterial antifungal	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; PINEDO-ESPINOZA; GUTIERREZ-TLAHQUE; SANTIAGO-SAENZ; AGUIRRE-MANCILLA *et al.* , 2020)
aloe	*aloe vera*	carotenoids flavonoids phenolic acids	antioxidant cardioprotective antiviral antibacterial antifungal	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; PINEDO-ESPINOZA; GUTIERREZ-TLAHQUE; SANTIAGO-SAENZ; AGUIRRE-MANCILLA *et al.* , 2020)
colorin	*American erythrina*	carotenoids flavonoids	antioxidant cardioprotective	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; JUCÁ;

		polyphenols	antiviral antibacterial antifungal anti-inflammatory antimicrobial	FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; PINEDO-ESPINOZA; GUTIERREZ-TLAHQUE; SANTIAGO-SAENZ; AGUIRRE-MANCILLA *et al.* , 2020)
blueberry cactus	*Myrtillocactus geometrizans*	carotenoids flavonoids phenolic acids	antioxidant cardioprotective antiviral antibacterial antifungal anti-inflammatory	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; PINEDO-ESPINOZA; GUTIERREZ-TLAHQUE; SANTIAGO-SAENZ; AGUIRRE-MANCILLA *et al.* , 2020)
guava tree	*acca sellowiana (O. Berg) Burret*	hydrolysable tannin anthocyanins flavonols flavonoids polyphenols	hypoglycemic antioxidant anti-obesity cardioprotective antiviral antibacterial antifungal	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; MAGRI; ADILETTA; PETRICCIONE, 2020; MONTORO; SERRELI; GIL; D'URSO *et al.* , 2020; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009)
Borage	*Borage officinalis*	flavonoids Anthocyanins Hydrolyzable Tannins	antioxidant hypoglycemic anti-obesity cardioprotective antibacterial antiviral antifungal	(FERNANDES; CASAL; PEREIRA; MALHEIRO *et al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009)
Calendula (cowgirl weed)	*Calendula arvensis*	flavonoids anthocyanins hydrolysable tannins	hypoglycemic antioxidant anti-obesity cardioprotective antiviral antibacterial antifungal	(FERNANDES; CASAL; PEREIRA; MALHEIRO *et al.* , 2019; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009)
girl kiss	*Cosmos bipinnatus*	flavonoids anthocyanins hydrolysable tannins	hypoglycemic antioxidant Anti-inflammatory anti-obesity cardioprotective antibacterial antiviral antifungal	(FERNANDES; CASAL; PEREIRA; MALHEIRO *et al.* , 2019; JANG; PARK; PARK; PARK *et al.* , 2008; JUCÁ; FILHO; ALMEIDA; MESQUITA *et al.* , 2018; KRIS-ETHERTON; KEEN., 2002; NOWICKA ; WOJDYLO, 2019; PRIOR; WU, 2009)
elderberry	*Sambucus nigra*	phenolic acids flavonols polyphenols carotenoids triterpenoids	antioxidant cardioprotective anti-inflammatory antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Arnica	*Arnica L.*	Phenolic acids Flavonoids Polyphenoids Carotenoids Triterpenoids	Antioxidant Anti-inflammatory Cardioprotector Antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Chamomile-common	*Matricaria L.*	phenolic acids flavonols polyphenols carotenoids triterpenoids	antioxidant anti-inflammatory cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)

cornflower	*centaur cyanus L.*	anthocyanins phenolic acids flavonols polyphenols triterpenoids carotenoids	hypoglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Daisy	*bellis perennis L.*	phenolic acid flavonols polyphenols carotenoids triterpenoids	antioxidant anti-inflammatory cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Calendula	*Calendula ofcinalis L.*	phenolic acids flavonols polyphenols carotenoids triterpenoids	antioxidant anti-inflammatory cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Acacia	*Acacia Mill.*	Phenolic acids Flavonoids polyphenoid carotenoids Triterpenoids	antioxidant anti-inflammatory cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
vulnerable	*Anthyllis vulneraria L.*	Phenolic acids Flavonoids Polyphenoids Carotenoids Triterpenoids	Anti-inflammatory Cardioprotector Antioxidant Antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Lavender	*Lavandula L.*	Anthocyanins Phenolic acids Flavonoids Polyphenous Triterpenoid Carotenoids	antihyperglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
white nettle	*Lamium album L.*	anthocyanins phenolic acids flavonols polyphenols carotenoids triterpenoids	antihyperglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009)
arboreal lavatera	*mallow arboreae L.*	anthocyanins phenolic acids flavonols polyphenols carotenoids triterpenoids	antihyperglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Small leaf linden	*Tilia cordata Mill.*	phenolic acids flavonols polyphenols carotenoids triterpenoids	antioxidant anti-inflammatory cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
mallow	*Mallow L.*	anthocyanins phenolic acids flavonols polyphenols carotenoids triterpenoids	hypoglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)

Primula	*Primula L.*	Phenolic acids Flavonoids Polyphenoids Carotenoids Triterpenoids	Antioxidant Anti-inflammatory Cardioprotector Antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Spinheiro white	*Crataegus L.*	phenolic acids flavonols polyphenols carotenoids triterpenoids	antioxidant anti-inflammatory cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)
Mullein	*Mullein L.*	anthocyanins flavonols carotenoids triterpenoids polyphenols	hypoglycemic antioxidant anti-inflammatory anti-obesity cardioprotective antimicrobial	(BUNGAU; ABDEL-DAIM; TIT; GHANEM *et al.* , 2019; KRIS-ETHERTON; KEEN., 2002; NOWICKA; WOJDYLO, 2019; PRIOR; WU, 2009; RAJIC; AKIHISA; UKIYA; YASUKAWA *et al.* , 2001)

The Food Guide for the Brazilian Population recommends the practice of a diversified diet, composed mainly of *in natura foods* that provide the intake of nutrients such as vitamins, minerals and chemical compounds, substances that have been shown to be efficient for protecting and promoting health, compared to to supplements or medications (BRASIL, 2014).

Compounds are secondary metabolites synthesized by plants, with the objective of attracting pollinators and protection, reducing damage caused by stress conditions such as heat, lack of water, excess ultraviolet radiation and infections by pathogens. They are widely found in edible flowers, the most common being flavonoids, anthocyanins, carotenoids and polyphenols, which provide health benefits because of their antioxidant, anti-inflammatory, anticancer and hypoglycemic effects, for example. However, the amount of flowers used by the population is small, either due to lack of knowledge and/or studies, difficulty in finding their own producers and keeping them in stock, or due to the short flowering period of the species (FERNANDES; CASAL; PEREIRA; PEREIRA *et al.* , 2019; KUMARI; UJALA; BHARGAVA, 2021; PINAKIN; KUMAR; SURI; SHARMA *et al.* , 2020) .

It is widely discussed in studies that a diet with antioxidants can prevent chronic diseases such as type II diabetes, cardiovascular disease and cancer, for example. The production of oxidant species during human metabolism is a natural process that plays an essential role in energy production, synthesizing compounds and signal transduction, however they can damage cells and lead to degenerative diseases. Thus, to avoid cell damage, the use of antioxidants is recommended, and edible flowers are a good source of them (LOIZZO; PUGLIESE; BONESI; TENUTA *et al.* , 2016; PRABAWATI; OKTAVIRINA; PALMA; SETYANINGSIH, 2021;) .

Flowers provide unique flavor sensations, increase the nutritional value of dishes and enhance gastronomic presentations. They can be eaten fresh, as is the case with marigold (*Calendula ofcinalis L.)*, with a slightly bitter taste, and pumpkin flowers (*Cucurbita maxima),* which are slightly sweet. The pansies (*Viola x wittrockiana)* , aromatic with a sweet taste, are widely used in salads, endings of savory dishes,

soups, desserts and drinks. Also dried, in the form of infusions, such as cornflower flowers (*Centaurea cyanus L)* which has a spicy flavor similar to cloves; Molecular gastronomy also makes extensive use of flowers being crystallized in foam and isolated pigments (FERNANDES; CASAL; PEREIRA; SARAIVA *et al.* , 2016; TAKAHASHI; REZENDE; MOURA; DOMINGUETE *et al.* , 2020) .

A survey carried out in Portugal showed that sociodemographic characteristics influenced the consumption of edible flowers, with most participants who had already ingested flowers had higher schooling (GUINÉ; FLORENÇA; FERRÃO; CORREIA, 2019) . In Brazil the use of flowers is still restricted, in this way, knowledge about flowers can be disseminated in order to contribute to the preservation of plant species and their use as a food resource, in favor of the population. (TAKAHASHI; REZENDE; MOURA; DOMINGUETE *et al.* , 2020) . The fact that some flowers are still unexplored makes it necessary to develop studies to trace the profile of bioactive compounds, degree of toxicity associated with the amount of ingestion, the presence of allergenic and beneficial compounds to consumption, as well as factors that contribute to the preservation and identification of these plants. (PINAKIN; KUMAR; SURI; SHARMA *et al.* , 2020) .

4 FINAL CONSIDERATIONS

Considering the perspectives of using flowers in food found in the literature, it is concluded that their consumption can significantly contribute to the composition of menus.

The nutritional properties described in the present study showed that the consumption of flowers can bring health benefits, highlighting the presence of bioactive compounds, which have high antioxidant potential, making it possible to use them as a contributing factor for the prevention and treatment of non-communicable chronic diseases, for example.

Finally, we observe that there is an important deficit of studies on edible flowers in Brazil. In this way, the development of research with native flowers, in order to know and encourage the cultivation and consumption of these vegetables is extremely relevant and necessary with different objectives that contemplate important links of sustainability and nutrition.

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