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SHORT REVIEW

Profiling of Mineral Content from Different Edible Flowers of West Bengal

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Abstract

Edible flowers have a good nutritional impact worldwide. West Bengal has a rich source of edible flowers consumed commonly. These flowers enhance the visual appeal of food and increase nutrient intake. This study aims to compare the mineral content of different edible flowers involving altogether forty-two species. This review focused on the various nutritional properties of various edible flowers based on several research performed until now. For maintaining good health and preventing various diseases minerals are required. Essential minerals (phosphorus, copper, potassium, calcium, zinc, sodium, iron, manganese and selenium) are present in edible flowers which are greatly beneficial for our bodies. Analytical techniques enable us to quantify the concentration of a particular mineral precisely. Potassium is the most abundantly found element in the flower of *Oenothera biennis* with a content of 7995 mg/100g followed by *Calendula officinalis* L. 7639mg/100g and *Viola tricolor* L. 7019mg/100g. This study concludes that it provides information based on the mineral content of these edible flowers and their potential role in the diet. Therefore, the mineral analysis study of these edible flowers can be helpful for future dietary recommendations.

Keywords: Atomic Absorption Spectroscopy, Dietary Recommendations, Edible Flower, Micronutrients, Mineral Element, Nutritional Value

1. Introduction

Flowers, which are the reproductive structure of flowering plants and are often referred to as blooms or blossoms, have been in use by mankind for various food and pharmaceutical applications that can support human health thus referred to as edible flowers. In our daily lifestyle flowers have a significant role in the human body. Edible flowers contain minerals that have health-promoting properties. Some are used in our daily diet. Flowers contain phytochemicals, antioxidants and specialised metabolites, which have nutritional properties that positively affect pharmacological benefits in human health. Plants absorb minerals from the soil and store them. These minerals have different medicinal values. The main minerals are phosphorus, copper, potassium, calcium, zinc, sodium, iron, manganese and selenium. These minerals also play a significant role in human health. An atomic absorption spectrophotometer is generally used to determine these minerals.

Today, good quality and fresh flowers are sold all over the world for human consumption. There are various types of edible flowers available in West Bengal which are widely consumed by people. Consumers today want meals that are appealing, healthful and delicious[1,2]. All of these qualities are shared by edible flowers, which are used in many restaurants and home-cooked meals[2,3]. They are used as a component in drinks, salads, soups, appetisers and desserts[1,4,5]. Dried edible flowers can be preserved in distillates, soft drinks (in ice cubes), canned sugar, etc. for consumption[6].

Edible flowers can have a significant effect on the sensory and nutritional value of food since they are found in various forms, colours and tastes. Sensory characteristics are the main criteria for the evaluation of edible flower quality, i.e., shape, size, colour, appeal,

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taste and aroma[7]. It is believed that edible flowers play a significant role in various types of food[6]. The significant amount of specialised metabolites present in edible flowers that can have functional and biological values e.g., antioxidant[8], anticancer[9,10], immunomodulatory[11], antibacterial, antiviral, hepatoprotective, antiallergic, anti-inflammatory, neuroprotective, antimalarial and cardioprotective properties[12,13]. The information on the mineral content along with the nutritional and chemical content of edible flowers from different food sources is very important for human health in the prevention and treatment of various chronic diseases[14].

Most of the research has shown that flowers have three parts (e.g., petals, pollen and nectar) where petals contain vitamins and minerals, pollen is composed of protein, fat and carbohydrates and nectar is the solution of single amino acids and carbohydrates[15]. Since petals possess most of the mineral content of the flowers, therefore for analysis of minerals most of the research works have been carried out on petals of edible flowers.

Despite the availability of a wide variety of edible flowers throughout Bengal, there is a lack of profiling of different mineral content from these edible flowers. Therefore, the present study aims to profile mineral content from different edible flowers of West Bengal.

2. Edible Flowers and Human Health

Human health largely depends upon food intake specifically functional foods which provide health benefits due to their nutrient-rich ingredients, including edible flowers. Many edible flowers are rich sources of minerals like phosphorus, copper, potassium, calcium, zinc, sodium, iron, manganese, selenium and chromium. Among these most of the flowers (e.g. *Monarda didyma* L., *Coriandrum sativum* L., *O. biennis*, *Monarda fistulosa* L., *Musa balbasiana*, *C. officinalis* L., *Borago officinalis* L., *Bombax costatum* L., etc.) are consumed by the common people in different parts of West Bengal. Mineral content analysis of all these edible flowers has been compiled and explored in Table 1 below.

Knowledge of the range of different important minerals is important for their dietary recommendation. Based on the literature review data, (Table 1 highest and lowest mineral content/range in the different edible flowers are as follows: phosphorus – from 0.065 (*Tagetes erecta*) to 916 (*M. didyma*); copper – from 0.089 (*Ccentaurea cyanus*) to 3.57 (*C. sativum*); potassium – from 0.215 (*T. erecta*) to 7995 (*O. biennis*); calcium – from 0.105 (*Spilanthes oleracea* Jacq.) to 1760 (*M. fistulosa*); zinc – from 0.30 (*Sesbania grandiflora*) to 22.52 (*M. balbasiana*); sodium – from 0.010 (*S. oleracea* Jacq.) to 649.2 (*C. officinalis*); iron – from 0.04 (*Hibiscus sabdariffa*) to 151.2 (*M. balbasiana*); manganese – from 0.229 (*C. cyanus*) to 32.46 (*M. balbasiana*); selenium – from 0.008 (*Tagetes patula*) to 0.028 (*B. officinalis*); and chromium – from 0.59 (*H. sabdariffa*) to 1.72 (*B. costatum*). Table 2 explores the three most potent edible flower sources for each of the mineral content studied in the present review. These data are important for the knowledge of nutritional recommendations concerning the mineral content of foods. Table 2 indicates the three most potent edible flowers concerning their mineral content.

Ten different minerals analysed in Table 2 have a high impact on normal physiology as well as on the prevention and management of different diseases and disorders. Phosphorus is involved in mainly the production of Adenosine Triphosphate (ATP), phospholipids and nucleic acids, also included in activating enzyme catalysis, regulating gene transcription, enabling signal transduction and maintaining the buffer in blood[70]. Copper is essential for cardiovascular integrity, neuroendocrine function, lung elasticity, neovascularisation, iron metabolism and adequate growth[71]. Potassium is essential for electrical excitation and membrane potential in both muscle and nerve cells and also helps in acid-base regulation[72]. Calcium is important in blood clotting, nerve and muscle function, maintaining bones and teeth health, oocyte activation, regulating fluid balance, heart-beat within cells,[73] and prevention of osteoporosis and osteoarthritis. Zinc is essential for the structure of proteins and cell membranes and regulates gene expression, cell signalling, hormone release and transmission of nerve impulse[74]. It also helps in insulin production and secretion for the management of diabetes while simultaneously serving as an immunity booster. Sodium is necessary for maintaining physical fluid system balance, also required for muscle and nerve functioning. It is essential for blood clotting, protein function, cell-membrane function and transmission of action potentials in

Table 1. Mineral content (mg/100g) in 42 species of edible flowers

Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
Family: Asphodelaceae													
1	*Hemerocallis hybrida* Hort. (Daylily)	841.000	37.000	2696.000	59.000	2.826	0.661	3.790	1.001	NR	NR		16,17
Family: Astraceae													
2	*Calendula officinalis* L. (Pot marigold/ *Genda*)	NR	649.200 ± 12.300	7639.000 ± 401.000	188.700 ± 7.200	6.030 ± 0.110	2.000 ± 0.120	20.000 ± 2.300	1.580 ± 0.110	0.010 ±1.900	NR		18,19,20
3	*Centaurea cyanus* L. (Cornflower)	53.448 ± 9.850	7.428 ± 2.050	356.877 ± 109.620	24.618 ± 17.880	0.759 ± 1.290	0.089 ± 0.080	0.689 ± 0.250	0.229 ± 0.290	NR	NR		6,21
4	*Chrysanthemum parthenium* L. (Feverfew)	50.129 ± 8.120	11.331 ± 3.080	360.034 ± 102.140	34.132 ± 13.070	0.594 ± 0.890	0.235 ± 0.080	0.583 ± 0.150	0.733 ± 0.340	NR	NR		6,22
5	*Tagetes erecta* L. (Marigold)	0.065 ± 0.007	0.015 ± 0.007	0.215 ± 0.007	0.110 ± 0.042	0.568 ± 0.093	0.104 ± 0.025	1.026 ± 0.052	0.303 ± 0.027	NR	NR		23,24
6	*Tagetes patula* L. (French marigold)	47.825 ± 9.240	11.432 ± 3.610	380.872 ± 98.560	34.685 ± 14.140	1.329 ± 1.120	0.109 ± 0.070	0.872 ± 0.240	0.786 ± 0.300	0.008 ±0.660	NR		6,19,25
7	*Chrysanthemum frutescens* L. (*Chandramallika*)	42.836 ± 7.620	8.910 ± 4.500	261.724 ± 101.350	25.855 ± 21.440	0.549 ± 0.810	0.220 ± 0.070	0.515 ± 0.320	0.786 ± 0.310	NR	NR		6,26

Table 1. Continued...

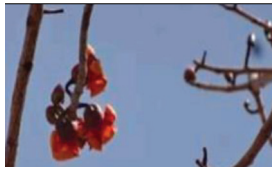
Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
Family: Balsaminaceae													
8	*Impatiens walleriana* L. (*Dopati*)	38.273 ± 10.320	9.429 ± 3.770	283.525 ± 86.740	40.562 ± 17.260	0.872 ± 1.020	0.131 ± 0.100	0.726 ± 0.160	0.605 ± 0.270	NR	NR		6,27
Family: Begoniaceae													
9	*Begonia boliviensis* (Begonia)	20.211 ± 14.300	9.334 ± 3.940	184.261 ± 94.750	34.873 ± 12.460	0.460 ± 0.570	0.194 ± 0.090	0.265 ± 0.210	0.435 ± 0.140	NR	NR		6,28
Family: Bombacaceae													
10	*Bombax costatum* L. (Cotton tree)	NR	NR	NR	NR	6.710 ±0.070	1.190 ±0.050	0.150 ±0.030	2.240 ±0.120	NR	1.720 ± 2.20		27,29,30
Family: Boraginaceae													
11	*Borago officinalis* L. (Indian borage)	NR	610.100 ± 35.400	5574.000 ± 170.000	520.100 ± 24.000	10.400 ± 0.600	2.820 ± 0.080	11.300 ± 0.000	4.180 ± 0.050	0.028 ±1.600	NR		18,19,31
Family: Brassicaceae													
12	*Brassica oleracea* L. (White Cauliflower)	329.000 ± 22.510	392.000 ± 10.250	3657.000 ± 12.020	480.000 ± 8.240	25.300 ± 2.010	NR	26.200 ± 1.960	2.150 ± 0.580	NR	NR		32,33
Family: Caprifoliaceae													

Table 1. Continued...

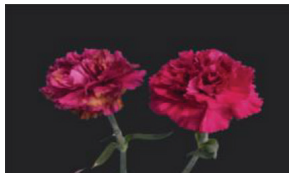
Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
13	*Lonicera japonica* L. (Honeysuckle)	NR	85.900 ± 0.600	4605.000 ± 20.000	143.400 ± 1.400	7.510 ± 0.290	1.840 ± 0.020	19.300 ± 1.600	5.310 ± 0.010	0.007 ±0.760	NR		18,19,34
Family: Caricaceae													
14	*Carica papaya* L. (*Papaya*)	26.470	5.200	36.200	44.500	0.450	2.520	1.760	0.330	BDL (DL: 0.02)	NR		19, 35,36
Family: Caryophyllaceae													
15	*Dianthus caryophyllus* L. (Clove Pink)	53.135 ± 7.600	11.429 ± 3.170	354.481 ± 100.800	49.189 ± 15.250	0.717 ± 1.310	0.288 ± 0.090	0.985 ± 0.250	0.749 ± 0.250	NR	NR		6,37
16	*Dianthus chinensis* L. Chianti (Indian pink)	788.000	26.000	2043.000	43.000	3.162	0.636	8.257	1.876	NR	NR		16,38
Family: Compositae													
17	*Spilanthes oleracea* L. (Toothache plant) Jacq.	0.080 ± 0.020	0.010 ± 0.000	0.355 ± 0.007	0.105 ± 0.035	0.543 ± 0.144	0.165 ± 0.057	1.500 ± 0.540	0.555 ± 0.239	NR	NR		39,40
Family: Cucurbitaceae													

Table 1. Continued...

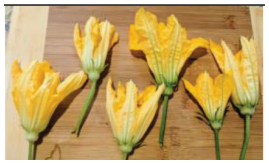
Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
18	*Cucurbita maxima* Duch. (Pumpkin)	21.810	6.320	50.980	52.430	0.430	3.320	1.650	0.340	BDL (DL: 0.02)	NR		19,35,41
Family: Leguminosae													
19	*Sesbania grandiflora* L. (*Bokphool*)	28.000	NR	180.000	62.000	0.300	NR	0.800	NR	0.002	NR		19,42,43
20	*Lavandula angustifolia* L. (English Lavender)	NR	75.200 ± 2.100	4446.000 ± 665.000	360.400 ± 57.100	11.100 ± 0.700	1.880 ± 0.210	24.400 ± 2.700	13.670 ± 2.100	0.009 ±0.100	NR		18,19,44
21	*Lavandula stoechas* L. (French Lavender)	NR	93.100 ± 4.800	4161.000 ± 349.000	315.500 ± 2.200	11.400 ± 1.100	2.840 ± 0.110	24.100 ± 0.100	26.900 ± 1.600	0.007 ±0.180	NR		18,19,45
22	*Monarda didyma* L. (Bee Balm)	916.000	10.000	3297.000	1678.000	4.276	1.366	16.540	2.124	NR	NR		16,46
23	*Monarda fistulosa* L. (Wild bergamot)	912.000	10.000	3407.000	1760.000	2.913	0.998	10.502	2.412	NR	NR		16,47
24	*Rosmarinus officinalis* L. (Rosemary)	NR	72.500 ± 4.600	4862.000 ± 268.000	166.600 ± 2.300	7.080 ± 0.400	2.800 ± 0.060	20.200 ± 4.200	8.970 ± 0.190	0.007 ±0.540	NR		18,19,48

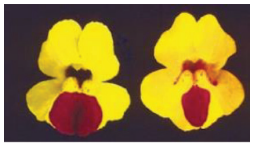
Table 1. Continued...

Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
25	*Salvia elegans* L. (Pineapple Sage)	NR	104.700 ± 2.300	2605.000 ± 46.000	173.400 ± 8.100	9.430 ± 0.120	1.630 ± 0.020	21.300 ± 2.100	9.530 ± 0.010	0.012 ±0.800	NR		18,19,49
Family: Liliaceae													
26	*Allium cepa* L. (Common Onions)	0.270	2.040	114.790	53.920	0.600	0.440	1.680	0.460	BDL (DL: 0.05)	NR		19, 35,50
Family: Malvaceae													
27	*Hibiscus esculentus* L. (Lady Finger)	795.000	17.200	NR	159.000	6.220	1.160	4.360	2.320	NR	NR		51,52
28	*Hibiscus sabdariffa* L. (Roselle)	163.000	3.830	NR	1130.000	3.730 ±1.300	0.560 ± 0.400	0.040± 1.000	24.300 ±1.600	NR	0.590± 4.600		27,29,51, 53
Family: Moringaceae													
29	*Moringa oleifera* (*Sajna*)	NR	120.9300	3.020	2.320	NR	NR	NR	NR	NR	NR		54,55
Family: Musaceae													
30	*Musa balbasiana* Banana flower)	296.600 ±0.000	5.10 ± 0.000	5016.600 ± 0.040	482.000 ± 0.000	22.520 ± 0.050	3.070 ± 0.000	151.260 ± 4.210	32.460 ± 0.800	NR	NR		55,56

Table 1. Continued...

Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
Family: Nymphaeaceae													
31	*Nymphaea stellata* (Water Lily)	0.320	152.100	442.680	507.000	8.960	1.150	4.230	NR	NR	NR		35,57
32	*Oenothera biennis* (Evening Primrose)	NR	152.400 ± 7.400	7995.000 ± 438.000	135.300 ± 7.600	8.290 ± 0.190	1.850 ± 0.150	21.200 ± 0.300	1.020 ± 0.100	0.019 ±2.800	NR		18,19,58
Family: Plantaginaceae													
33	*Antirrhinum majus* (Snapdragons)	41.762 ± 11.210	8.774 ± 3.420	286.183 ± 112.210	35.720 ± 10.300	0.889 ± 0.940	0.162 ± 0.080	0.438 ± 0.140	0.573 ± 0.290	NR	NR		6,59
34	*Antirrhinum majus* L. Cavalier (Snapdragons)	773.000	38.000	2652.000	112.000	1.323	0.410	7.552	0.990	NR	NR		16,60
Family: Rosaceae													
35	*Rosa odorata* (Rose)	22.517 ± 6.180	7.661 ± 1.970	196.911 ± 92.100	27.515 ± 18.550	0.455 ± 0.800	0.228 ± 0.100	0.355 ± 0.180	0.344 ± 0.200	0.001 ±0.900	NR		6,19,61
Family: Sapotaceae													
36	*Madhuca indica* L. (*Mahua*)	140.000	0.020	1.200	140.000	NR	NR	15.000	NR	NR	NR		35,62

Table 1. Continued...

Sl. No.	Scientific Name (Common Name)	Phosphorus	Sodium	Potassium	Calcium	Zinc	Copper	Iron	Manganese	Selenium	Chromium	Image	Reference
Family: Scrophulariaceae													
37	*Mimulus* × *hybridus* L. Magic Red (Monkeyflowers)	786.000	58.000	4586.000	289.000	2.553	0.885	68.350	3.064	NR	NR		16,63
38	*Mimulus* × *hybridus* L. Magic Yellow (Monkeyflowers)	817.000	127.000	5445.000	163.000	3.992	1.935	36.823	1.820	NR	NR		16,64
Family: Tropaeolaceae													
39	*Tropaeolum majus* L. (Nasturtium)	48.131 ± 6.820	8.852 ± 4.270	245.339 ± 94.730	33.723 ± 18.620	0.907 ± 1.270	0.117 ± 0.110	0.647 ± 0.130	0.585 ± 0.240	0.009 ±1.030	NR		6,19,65
Family: Umbelliferae													
40	*Coriandrum sativum* L. (*Dhania*)	NR	395.100 ± 20.500	6566.000 ± 12.000	647.200 ± 3.500	21.200 ± 0.500	3.570 ± 0.220	28.400 ± 1.100	7.280 ± 0.490	0.004 ±0.210	NR		18,19,66
Family: Violaceae													
41	*Viola tricolor* L. (Wild Pansy)	NR	145.400 ± 16.900	7019.000 ± 144.000	185.200 ± 3.800	15.200 ± 0.700	2.110 ± 0.200	38.600 ± 3.300	6.740 ± 0.060	0.015 ±3.600	NR		18,19,67
42	*Viola wittrockiana* (Garden Pansy)	51.462 ± 10.320	13.197 ± 3.920	396.484 ± 85.050	48.644 ± 24.650	1.152 ± 1.060	0.195 ± 0.100	0.729 ± 0.190	0.793 ± 0.270	NR	NR		6,68

- BDL – Below Detection Limit
- DL – Detection Limit
- NR – Not Reported

Table 2. List of edible flowers with the highest mineral content (mg/100g)

Sl. No.	Minerals	Name of edible flowers with the highest mineral content (mg/100g).		
		3 most potent edible flowers for the minerals		
1	Phosphorus	*Monarda didyma* L. (916 mg/100g)	*Monarda fistulosa* L. (912 mg/100g)	*Hemerocallis hybrida* Hort. (841 mg/100g)
2	Sodium	*Calendula officinalis* L. (649.2 mg/100g)	*Borago officinalis* L. (610.1 mg/100g)	*Coriandrum sativum* L. (395.1 mg/100g)
3	Potassium	*Oenothera biennis* (7995 mg/100g)	*Calendula officinalis* L. (7639 mg/100g)	*Viola tricolor* L. (7019 mg/100g)
4	Calcium	*Monarda fistulosa* L. (1760 mg/100g)	*Monarda didyma* L. (1678 mg/100g)	*Hibiscus sabdariffa* L. (1130 mg/100g)
5	Zinc	*Brassica oleracea* L. (25.3 mg/100g)	*Musa balbasiana* (22.52 mg/100g)	*Coriandrum sativum* L. (21.2 mg/100g)
6	Copper	*Coriandrum sativum* L. (3.57 mg/100g)	*Cucurbita maxima* (3.32 mg/100g)	*Musa balbasiana* (3.07 mg/100g)
7	Iron	*Musa balbasiana* (151.26 mg/100g)	*Mimulus* × *hybridus* L. Magic Red (68.350 mg/100g)	*Viola tricolor* L. (38.6 mg/100g)
8	Manganese	*Musa balbasiana* (32.46 mg/100g)	*Lavandula stoechas* L. (26.9 mg/100g)	*Hibiscus sabdariffa* L. (24.3 mg/100g)
9	Selenium	*Borago officinalis* L. (0.028 mg/100g)	*Oenothera biennis* (0.019 mg/100g)	*Viola tricolor* L. (0.015 mg/100g)
10	Chromium	*Bombax costatum* L. (1.72 mg/100g)	*Hibiscus sabdariffa* L. (0.59 mg/100g)	-

acetilocolinergic synaptic transmission[75]. Iron is essential for haemoglobin formation, transportation of oxygen in the blood and prevention of anaemia[76]. Manganese is important for immune function, digestion, reproduction, bone growth, blood sugar and cellular energy regulation[77]. Selenium is important for the synthesis and metabolism of thyroid hormones which are essential for growth and development. It also has anticarcinogenic, antioxidant, antibacterial and anti-inflammatory activity[78]. Chromium is essential for normal regulation of lipid, protein, and carbohydrate metabolism, stimulating intracellular activity, increasing glucose uptake in muscle cells, and regulating blood glucose levels[79].

The edible flowers safety concerns were reported in the European Union Rapid Alert System for Food and Feed (RASFF). Table 3 indicates the list of minerals along with their tolerable upper intake levels for the human body.

The nutritional recommendations of different minerals in the study can be formulated based on the mineral content provided in Table 2 and the tolerable upper intake levels which are represented in Table 3. It will help boost overall immunity, overcome micronutrient deficiency and also prevent and manage different diseases. By adhering to these recommendations, we can ensure nutritional needs and promote overall well-being.

Though these edible flowers are consumed regularly, there is a concern about microbial contamination

Table 3. List of minerals with their tolerable upper intake levels

Sl. No.	Minerals	Tolerable upper intake levels.	References
1	Phosphorus	4000 mg/day	[80]
2	Sodium	2300 mg/day	[81]
3	Potassium	5000 - 7000 mg/day	[82]
4	Calcium	2500 mg/day	[83]
5	Zinc	40 mg/day	[84]
6	Copper	10 mg/day	[85]
7	Iron	45 mg/day	[85]
8	Manganese	11 mg/day	[86]
9	Selenium	400 – 700 µg/day	[87]
10	Chromium	1 mg/day	[88]

checking before intake to maintain safety corners. Bacteria like *Salmonella* spp. and some chemicals like dimethoate, sulfites and diethyl-meta-toluamide are the main cause of concern. The plant materials and flowers may get infested with bacteria before or after harvesting[89]. The edible flowers may become contaminated in the fields due to fertilisers, soil, or irrigation, especially when using surface water[90]. Contamination can occur after harvesting through various routes during transport, distribution, food processing and food preparation. e.g., hygiene of workers, water used to wash or the ice used to chill or use[91]. A limiting factor may also be the amount of flowers consumed. To determine the optimal species, cultivars and suggested dietary amounts, more research in this area may be expected[92].

3. Discussion and Conclusion

The study provides data on the highest amount of nutrient content of 42 edible flowers, which are used in the human diet. Edible flowers are a rich source of macro- and microelements, particularly phosphorus, potassium and iron. This study examines the micronutrient content of various edible flowers in West Bengal, highlighting their health benefits and safety. The study is important to analyse the nutrient content and also the beneficial and functional properties of the 42 edible flower species investigated. The *Monarda* species contains the highest amount of phosphorus and calcium, the *M. balbasiana* contains the highest amount of zinc, iron and manganese, the *O. biennis* flower contains the highest amount of potassium, *B. officinalis* and the *C. sativum* flower contains the highest amount of selenium and copper respectively. The findings underscore the nutrient content of the selected edible flowers, positioning them as versatile raw materials for diverse food products. This study highlights the substantial mineral content in 42 different species of edible flowers which is greater than many fruits and vegetables[93-95]. Consequently, edible flowers hold immense potential as a novel and attractive food source for human nutrition. Public education and the advancement of edible flowers emerge as crucial aspects, prompting the undertaking of this study precisely for that purpose. The acquired data are poised to play a vital role in popularising edible flowers, presenting them as a fresh and promising resource for the food industry, gastronomy and as a vital component of human nutrition.

4. References

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