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MICROGREENS: A POTENTIAL ADD-IN FOR HEALTHY DIET

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Micro greens are recently gaining public attention because of their cooking and edible properties. Adding these to raw veggies can enhance the flavor and nutritional values and they can also be used as edible toppings for decorating several food items. The microgreens rose from cabbage, spinach, mustard, lettuce, radish etc. are relished by many. Due to the richness of huge number of biologically active compounds such as antioxidants, vitamins and minerals, the demand of microgreens has been raising high with each passing day. Here in this article the potential health benefits, nutritional values, easy growing procedures etc. have been discussed.

Introduction

The soft tender shoots of a vegetable or herb plant that are consumed at cotyledon stage after appearance of first true leaves are called as microgreens. Mostly they are raised up to a height of 5-10 cm (2-4 inches). Microgreens shouldn't be confused with sprouts, as sprouts have growing period of 2-7 days and are devoid of leaves while microgreens are generally picked up in 10-21 days after germination having emerged first true leaves on them. Thus microgreens are plants that fall in between sprouts and baby greens. They come in wide range of colours, also impart aromatic flavor to variety of dishes and also can be consumed raw as salad. In general, the taste of microgreens varies in a range from neutral to spicy, bit sour or even sometimes bitter. Hence in overall, they give a strong and concentrated flavour.

Different types of Microgreens

Several vegetable as well as cereal and legume crops are now-a-days grown as microgreens to harness their nutritional values at a very early stage. A total of 40 crop varieties are taken into commercial production recently.

Table 1: Some important food crops for micro-greens

Serial number	Family	Crops grown as microgreens
1.	Amaryllidaceae	Onion, Garlic, Leek
2.	Amaranthaceae	Amaranth, Beetroot, Swiss chard, Quinoa, Spinach
3.	Apiaceae	Carrot, Celery, Dill, Fennel, Coriander, Fenugreek
4.	Asteraceae	Chicory, Endive, Lettuce, Radicchio
5.	Brassicaceae	Arugula, Broccoli, Cabbage, Chinese Cabbage, Cauliflower, Radish, Water cress, Mustard, Kale
6.	Cucurbitaceae	Cucumber, Melon, Squash
7.	Poaceae	Barley, Corn, Oats, Rice, Wheat
8.	Leguminoceae	Beans, Chick pea, Lentil, Pea, Mung bean



Cabbage microgreens



Peashoot microgreens



Spinach microgreens



Broccoli microgreens



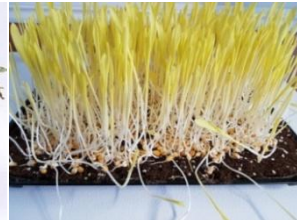
Mustard microgreens



Radish microgreens



Beet microgreens



Corn microgreens

Nutritional Values

Microgreens are often referred as packet of nutrients. Although their nutrient composition varies a little, majority of them are reported to be rich source of potassium, iron, zinc, magnesium, copper etc. Apart from these, beneficial plant compounds such as antioxidants are also abundantly present in microgreens. Microgreens mostly contain higher concentration of vitamins, minerals and antioxidants than the amount available in matured greens, thus their nutrient composition is known to be quite concentrated. Several research works has reported that in microgreens, the nutrient content can be comparatively more i.e.

up to 9 times higher than that of the nutrient content found in matured greens (except Amaranthus, where the mature stage contain more amount of nutrients than microgreen stage). Also the matured shoots of microgreens are found to possess several kinds of polyphenols and other antioxidants. A study consisting of 25 commercially grown microgreens showed that the level of vitamins and antioxidants present in microgreens is 40 times higher than those are reported in matured greens, as per the record of USDA National Nutrient Database for mature leaves (Sharma et al., 2020). In comparison with sprouts, also the microgreens are having significantly more amount of nutrient elements.

Health Benefits

Risk of several human health related diseases can be lowered by vegetable consumption owing to the presence of high amount of vitamins, minerals and other beneficial plant bioactive compounds such as carotenoids, phylloquinone, ascorbic acid and tocopherols in them (Mir et al., 2017). Similarly, as mentioned in the nutritional values of microgreens, they contain higher amount of nutrient elements than those of in matured greens, thus contributing in the reduction of risk of different diseases. Some of them are mentioned below:

A. Heart disease: Polyphenols, a class of antioxidants are reported to be packed in microgreens which is related with lowering the threat of heart ailment. Consuming microgreens lowers the triglyceride and “bad” LDL cholesterol levels and keeps heart healthy.

B. Alzheimer’s disease: It is also called as senile dementia which destroys memories interrupting in brain cell connections and cellular degeneration and finally death. Microgreens are rich source of several antioxidants and polyphenols that can reduce the Alzheimer’s disease risk in humans.

C. Diabetes: Antioxidants present in microgreens can assist in bringing down the stress that can restrain sugar from entering into the cells properly. Several studies conducted laboratory suggest that the fenugreek microgreens can apparently augment cellular glucose uptake by 25–44% hence lowering the risk of diabetes.

D. Certain cancers: Now-a-days cancer has become one of the biggest threats to human. The cancer cells proliferate in the human body quickly destroying other body tissues. The antioxidant and polyphenol richness of microgreens, can lower the chance of certain kind of cancer risks.

How Microgreens are Consumed?

Several ways shows incorporation of microgreens in our daily diet. Following indicate some of them:-

- a. Microgreens can be added to different delicacies that include burgers, sandwiches, wraps and even sometimes can be consumed fresh as salads.
- b. They can be used solely for juice extraction or can be blended into smoothies. Wheatgrass juice is now-a-days preferred juiced microgreen.
- c. Can be used as a side dish to any main course.
- d. Add flavor and colour to an omelet or frittata.

Growing of Microgreens

Growing microgreens is quite easy and convenient, as it doesn't necessarily require much equipments and time. They can be raised both indoors and outdoors round the year. The steps for growing microgreens are mentioned below.

Step 1:- Selecting container for raising microgreens comes first. The containers should be shallow having a depth of 2-4 inches max, as there is no requirement for deep establishment of roots of germinated seedlings. The container must provide sufficient outlets for drainage of excess water.

Step 2:- Next comes growing media. The potting soil should be light in texture and must not be compressed to too thick. Microgreens can be raised on single use growing mats specially designed for growing microgreens. After filling the soil mix in container, it is watered lightly 10-12 hours before planting the seeds of microgreens to settle it down.

Step 3:- Seeds of desired crop are sprinkled over the growing media making sure an even distribution of them. The sown seeds are covered with thin layer of potting soil to secure them. The container is then given a light irrigation and covered with plastic lid or dark cloth to provide a blackout period of 2-3 days. This blackout period helps to induce germination.

Step 4:- Growth of microgreens is monitored regularly and water is given in form of mist to keep the media containing seeds moist. The plastic lid covering is removed, 2-3 days after the seed germination and the growing container is gradually exposed to direct sunlight.

Step 5:- The germinated microgreens are watered depending on the plant requirement and soil condition. When irrigation is given, it should be kept in mind not to wet the leaves of microgreens as it may create congenial condition for various fungal disease incidences, instead they are watered from side of the growing container. Providing water once a day helps the microgreens to grow properly and attain desired colour.

Step 6:-It takes around 7-10 days for the microgreens to be ready for harvest. When they reach a length of 6-8 cm, they are snipped off from the soil by using a sharp knife or a pair of gardening shears. Only the shoot portions are harvested as the microgreen roots are not edible.

Step-7: After harvesting the microgreens are washed properly to remove any soil residue if attached and served fresh.

Conclusion

Adding microgreens to our daily diet can be served as one of the great ways to start a healthy life style. In India, they can be raised quite easily in the kitchen garden or terrace round the year. The size of microgreens might be small, but they are densely packed with several nutrient elements in comparison with matured plants. Consumption of microgreens is tested to be safe for both adults and childrens. Microgreens should be used fresh, as storing them for long can reduce the flavor and cause nutrient loss. Thus they should be eaten within 2 days after harvesting. Taking the potential health benefits into account, microgreens should be incorporated in our food culture.

References

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