

Microgreen - New Functional Food

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Agriculture Vegetables are often referred as protective food in terms of nutritive and medicinal value. It is one of the important components in Indian agriculture towards nutritional security. In recent days demand for fresh and pesticide free vegetables is increasing. The transition from rural to urban areas has led to the emergence of megacities, but at the same time, more arable land is needed to support the growing population. The expansion of arable land, unfortunately, often encounters various environmental challenges, such as the depletion of groundwater resources and deforestation. As a result, vertical cultivation techniques, as part of the mission toward sustainable agriculture, have evolved as an effective approach to alleviate the conflict between urbanization and the need of arable land. So, microgreens are the new class of edible vegetable with lots of potential in terms of nutritional ability to cure various deficiencies. Vegetables which are harvested after the cotyledon leaves have developed and one set of true leaves are referred as microgreens.

Microgreens stats their journey from San Francisco which was included in chef's menu in early 1980s. The first documented use of the word microgreens strated in UAS during 1998. Microgreens are contained high number of Carotenoids, Chlorophyll, organic acids without sugars. These

greens exhibit higher anti-diabetic and anti-cholinergic activities than sprouts. Microgreens take generally 7-14 days to harvest and they are of 4-7inches in length. These can be grown both in soil and hydroponics way with good air ventilation. Nutrient content of microgreens are more than sprouts. Microgreens are rich in vitamin C, mineral like K, Cu, Zn, Fe, and also Phytochemicals including carotenoids and phenolic compounds, which act like antioxidants. Some of the researches shown that microgreens have both anti-inflammatory and anti-cancer, anti-bacterial and anti-hypoglycaemic properties. These properties make the microgreen as new functional foods for human begins. The suitable way of growing microgreens is vertical farming, green house, hydroponics aquaponics. One can grow 80 different types of microgreens. Some of the well-known seeds from different plant families which are suitable for production of microgreens.

Brassicaceae – Broccoli, Cauliflower, Water cress, Cabbage, Arugula, Radish
Asteraceae family – Endive, Lettuce, Radicchio, Chiory
Apiaceae family – Carrot, Dill, Cellery, fennel
Amarylildaceae family – Onion, Leek, Garlic



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Amaranthaceae family – Quinoa, Swiss chard, Amaranth, Spinach, Beet

Cucurbitaceae family – Cucumber, Squash and melon

Cereals – Rice, Oats, Wheat, Corn and Barley

Legumes – Chickpea, Beans, Lentils

In one of the research, it was also found that vitamins and antioxidants values were upto 40 times higher than that of fully grown vegetable leaves. According to some more research microgreens have great content of antioxidants i.e. polyphenols, which can reduce the risk of heart disease. They also have the ability to lower the triglycerides and LDL. On the other hand, microgreens can decrease the probability of Alzheimer's as they contain polyphenols. Presence of antioxidants can facilitate to lower the risk of type-2 diabetes and they also have the ability to reduce the danger of different kinds of cancers.

With respect to the food safety hazards, sprouts are mainly grown – up in dark environment of moisture where ready to microbial proliferation and their use different from microgreens has been applied in out breaks of food borne epidemics.

One of the major limitation of microgreens is their rapid quality deterioration that occurs soon after harvest, and so restricts their commercialization to local sales. Microgreens can be also commercialized in boxes with substrates, without harvesting. This

strategy allows longer shelf life and wide opportunity for the commercialization.

Special attention must be addressed to the choice of growth media, which represents one of the key factors in the production process and could influence microgreens yield and quality. Among common substrates used for the microgreens production, peat-based media are the most utilized, followed by coconut coir and several synthetic media. Recently, natural fiber-based media—such as jute, cotton, cellulose, etc.—have gained increasing popularity since they could represent a sustainable alternative.

There are many ways to include microgreens in your diet. They can be incorporated into a variety of dishes, including sandwiches, wraps and salads. Microgreens may also be blended into smoothies or juiced. Wheatgrass juice is a popular example of a juiced microgreen. Another option is to use them as garnishes on pizzas, soups, omelets, curries and other warm dishes.

There is scope to explore broad range of area especially commercialization of microgreens cultivation. The effect of both light and temperature on nutritional value need to be studied elaborately. Study mainly related to the quality and safety of microgreens has to be the focus area.

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