

## CHAPTER-7

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### A REVIEW ARTICLE ON MICRO-GREENS : AN EMERGING NUTRITIONAL SUPERFOOD

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#### Summary

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Micro-greens is the new emerging nutritious food which is grown from various food crops, such as vegetables, grains and herbs, consist of developed cotyledons along with partially expanded true leaves. Depending upon the variety, the life span of these plants is between 7–21 days. They are treasured for their densely packed nutrients, concentrated flavors, immaculate and tender texture as well as for their vibrant colors. In recent years, the microgreens are on demand from high-end restaurant chefs and nutritional researchers due to their potent flavors, appealing sensory qualities, functionality, abundance in vitamins, minerals, and other bioactive compounds, such as ascorbic acid, tocopherol, carotenoids, folate, tocotrienols, phyloquinones, anthocyanins, glucosinolates, etc. A recent boom in the research on microgreens intrigued the need for research in their composition and the upcoming research. The review article was conducted with the help of literature sources – encyclopedia, science direct and PubMed. The article comprises of the comprehensive review of the ongoing and current research involved with regards to microgreens and their potential.

**Keyword:** Nutrition, Microgreens, Food crops.

#### Introduction

COVID-19 influence the mental and physical well-being of the human being. At that time, World Health Organization (WHO) issued guidelines to avoid the spreading of the maladies Physical separating and isolate measures strongly emphatically affected people's lives, their eating propensities and regular ablutions. Individual turned towards natural cultivating and kitchen gardening.

To adapt with the circumstances, individual begun developing sound and green veggies grown at their domestic put. Amid this period, unused novel word is coming into exist i.e. Microgreens. In the period of worldwide well-being awareness, microgreens have been joined into people eat less due to their capacity to fill wholesome crevices and wellbeing support. Considered to be fantastically nutritious, microgreens are too known as “superfoods” and may be gathered in between a week to three weeks (Zhang et. Al., 2021; Jambor, et. Al., 2022). Microgreens are well utilize as serving of mixed greens or consumable garnishes for soups, sandwiches, and an assortment of fundamental dishes due to their unmistakable flavors, engaging tones, and sensitive surfaces. The utilize of a distinctive assortment of microgreens species can include visual and enriching appearance to a dish. In expansion, microgreens are perfect for indoor development and symbolize a worldwide move toward climate-controlled cultivation ( Riggio et. al., 2019).

### What are Microgreens?

Microgreens are young seedlings of eatable herbs and vegetables that are harvested when they have their first true leaves. They are littler than child greens and are known for their strongly flavor, dynamic colors, and concentrated nutrients. Microgreens have three basic parts: a central stem, cotyledon leaf or leaves, and typically, the first pair of very young true leaves. They vary in size depending upon the specific variety grown, with the typical size being 1 to 1.5 in (25 to 38 mm) in total length. When the plant develops past this measure, it is most part no longer considered a microgreen, instead being called a petite green (<https://en.wikipedia.org/wiki/Sprouting#Protein> ).



**Fig. 1. Different stages of development of Microgreen of Mustard plants**



**Fig. 2. Emerging Microgreen plants of Chickpea**

This novel concept came into existence when individuals know the edible properties of the microgreens. These are included to increment flavors and wholesome esteem of crude veggies or as palatable fixings to brighten an expansive number of other nourishment things. Fundamental lesson of miniaturized scale greens is raised for most part from cabbage, mustard, buckwheat, radish, spinach, lettuce, etc. Microgreens is the requesting infant greens has been expanding, due to nearness of colossal number of naturally active compounds like essential vitamins, minerals and antioxidants as compare to completely developed greens (necessary for healthiness). This article is pointed to deliver essential data and an overview on the comparison between microgreens and sprouts, its nutritional value, benefits and along with their future viewpoint (<https://en.wikipedia.org/wiki/Microgreen> ).

## Sprouts VS Microgreens

Sprouting is the natural process by which seeds or spores germinate and put out shoots, and already established plants produce new leaves or buds or other structures experience further growth. Seeds are germinated or partially germinated seeds. A sprout consists of the seed, root, stem, while microgreens are harvested without the roots.

## Health Benefits of the Microgreens

Microgreens consist of full package of antioxidants and vitamins. Research studies confirmed that they are up to 40 times more potent in phytochemicals than full developed vegetables and herbs. Researchers see microgreens as a functional food, which means that they can provide key nutrients for body development. Microgreens contain huge amounts of all these nutrients than mature green plant. Recently lot of studies have been proved, they may similarly reduce the risk of the following diseases:

- **Heart disease:** Microgreens are a rich source of polyphenols, associated with antioxidants proved to a lower risk of the heart attacks. Further studies also show that microgreens may lower triglyceride and “bad” LDL cholesterol levels from the human body (Tangney et. al., 2013; Huang et. Al., 2016).
- **Alzheimer’s disease:** Antioxidant-rich foods, including those containing high amounts of polyphenols, may be linked to a lower risk of Alzheimer’s disease (Sheeja et al., 2014).
- **Diabetes:** Antioxidants may help reduce the type of stress that can prevent sugar from properly entering cells. In lab studies, fenugreek microgreens appeared to enhance cellular sugar uptake by 25–44% (Gordon et. al., 1996).
- **Certain cancers:** Antioxidant-rich fruits and vegetables, especially those rich in polyphenols, may lower the risk of various types of cancer. Polyphenol-rich microgreens may be expected to have similar effects (Zhou et al., 2016).

## Future Perspective

In coming years, Microgreens are rising field because of its high request from eatery chefs and wholesome analyst due to their strong flavors, engaging tactile qualities, usefulness, abundance in vitamins, minerals, and other bioactive compounds, such as ascorbic acid, carotenoids, folate, tocotrienols, phyloquinones, anthocyanins, glucosinolates, etc. These qualities of microgreens open new field of research which is utilize for well-being of human health and nutrition. Expanding open concern with respect to wellbeing has provoked people to turn towards microgreens which appear potential in the anticipation of lack of healthy sustenance, aggravation, and another affliction. In the nutshell, article focus on the benefits of microgreens in the prohibition of the non-communicable diseases that overcome in the present generation, which is emerged due to inactive lifestyles, so keeping this view in mind, the article creating awareness in the people to switch to the recently introduced new category of veggies and which play important role for the development of health-promoting diets with microgreens.

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