

Effects of Different Drying Technologies on Bioactive Components in Wheat Seedlings

ABSTRACT: The wheat seedlings were dried in different ways, and the effects of different drying conditions on their bioactive components were explored, and an optimum drying process was obtained. The contents of total chlorophyll, polysaccharide, flavonoids and polyphenols were determined by colorimetry.

The results showed that the highest total chlorophyll content was 82.33 mg/100 g when [microwave drying equipment](#) was 560 W; the highest polysaccharide and polyphenol content was 19.87 mg/g and 5.80 mg/100 g when oven drying temperature was 90 degrees C; the highest content of flavonoids was 5.29 mg/100 g when microwave power was 420 W; conclusion: the best drying condition was oven drying temperature 90 degrees C, microwave drying. The power is 420 W.

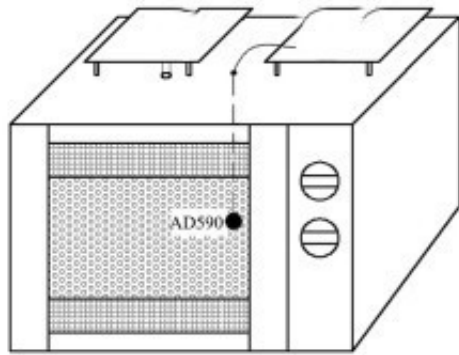
Key words: [microwave drying of wheat seedlings](#); bioactive components; drying technology; drying temperature; microwave power



Germinated wheat seedlings are rich in protein, minerals, vitamins, active enzymes, etc. These organic substances can be quickly absorbed and utilized by the human body to improve the immunity of the body.

Protein content decreases with germination, while alpha-amylase increases with germination. Fatty acids, lipases and phytase also increase. Starch content decreases with germination and converts to low-molecular-weight reducing sugar. In addition, wheat seedlings also contain many other organic substances, such as chlorophyll, flavonoids, polysaccharides and polysaccharides. Polyphenols and other substances, they also play an important role in the body.

Plant polysaccharides play an excellent role in lowering blood pressure, lowering blood lipids, regulating immune function, anti-aging and treating diabetes mellitus. Flavonoids can effectively prevent osteoporosis and treat diabetes mellitus, especially in anti-cancer, and can effectively inhibit the growth of cancer cells.



Schematic diagram of microwave drying temperature control system

Polyphenols have antioxidant effect, can remove a small amount of oxygen and free radicals in food, can block the further oxidation reaction, and have certain health function. They have significant effects in anti-cancer and bacteriostasis. Chlorophyll mainly contains chlorophyll a and chlorophyll B. Chlorophyll has many uses such as hematopoiesis, providing vitamins, detoxification, disease resistance and so on. In this paper, the effects of different drying processes on the contents of total chlorophyll, polysaccharide, flavonoids and polyphenols in wheat seedlings were studied, which provided a theoretical basis for the development of wheat seedlings.

Under oven drying conditions, with the gradual increase of temperature, the drying time required for drying to constant weight also decreases sharply; under microwave drying conditions, the greater the power, the shorter the drying time to constant weight. The higher the drying temperature of oven, the faster the evaporation rate of water and the shorter the drying time. In microwave drying, microwave is a kind of electromagnetic wave with strong penetration and uniform heating. It can produce high temperature instantaneously. The higher the power, the shorter the heating time.