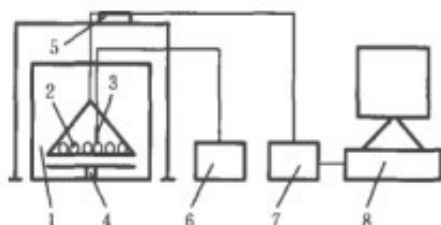


Effects of drying methods on color, polyphenols and antioxidant activity of Tartary Buckwheat malt

The effects of vacuum freeze drying, hot air drying, [microwave drying equipment](#), natural shade drying and sun drying on the color of Tartary Buckwheat malt and the content, components and antioxidant activity of polyphenols in methanol extract were studied. The results showed that different drying methods had significant effects on the color, polyphenol content, composition and antioxidant activity of Tartary Buckwheat malt.

The color change of Tartary Buckwheat malt was the smallest in vacuum freeze-drying and hot air drying at 60 C, while that of natural shade-drying was the worst. Tartary buckwheat malt contains a variety of polyphenols, the highest content of which is rutin, followed by quercetin and chlorogenic acid. Drying methods have significant effects on these components.



The total flavonoids and polyphenols in the samples dried by vacuum freeze-drying, hot air drying at 60 ~C and natural shade drying were significantly higher than those of other drying methods, and the samples had strong antioxidant activity. Combining with the change of color during drying, the color and active ingredients of buckwheat malt could be maintained to the greatest extent by vacuum freeze-drying and hot air drying at 60 ~C. In practical application, the color and active ingredients of buckwheat malt could be maintained according to the situation. Choose to use.

Key words: [microwave drying of Tartary buckwheat](#); drying method; color; polyphenols; total flavonoids; antioxidant activity



Buckwheat originated in China and belongs to dicotyledon of Buckwheat of Polygonaceae. There are two cultivated species of buckwheat, sweet buckwheat and bitter buckwheat. The

content of polyphenols and flavonoids and antioxidant activity of tartary buckwheat extract were higher than those of sweet buckwheat. Flavonoids are the main components of polyphenols in buckwheat, which can maintain capillary permeability, reduce its fragility, prevent blood cell agglutination, anti-inflammatory, anti-allergic, diuretic cardiogenic and other effects. In addition, inorganic elements in tartary buckwheat can improve the content of essential elements in the body, and also play a role in protecting liver and kidney and enhancing immunity.

Modern medical research has found that buckwheat food has the effect of lowering blood lipid and blood sugar, and has a special effect on diabetes mellitus. At the same time, it has good preventive and therapeutic effects on hyperlipidemia, cardiovascular diseases and hypertension. Tartary buckwheat contains many beneficial ingredients, but at the same time contains protease inhibitors and other anti-nutritional factors, which reduces the absorption and utilization of protein and other nutrients.

Tartary buckwheat can reduce or eliminate the content of antinutritional factors after germination treatment. After germination, the content of flavonoids in Tartary Buckwheat buds increased, especially the content of rutin. In addition, the production cycle of Tartary Buckwheat malt was short and the cost was low. Therefore, buckwheat germination treatment can significantly improve the edible and medicinal value and economic benefits of Tartary buckwheat.

Drying is widely used in the preservation of food and its raw materials. Drying can reduce water content, prolong storage time, expand utilization and utilization, but unsuitable drying methods can damage the beneficial ingredients in food and raw materials.

Guo Zemei et al. studied the effects of drying methods on polyphenols and antioxidant activity of grape peel. Luke et al. studied the effects of different hot air drying methods on the composition and antioxidant activity of *Lentinus edodes* polyphenols. Lu Shuang et al. studied the effects of different drying methods on menthol polyphenols, total flavonoids and antioxidant activity. However, the drying of Buckwheat malt has not been reported yet. This experiment was conducted with tartary buckwheat malt as raw material. The effects of vacuum freeze drying, hot air drying, microwave drying, natural sun drying and natural shade drying on the color, total flavonoids, polyphenols content and antioxidant activity of Tartary Buckwheat buds were studied.