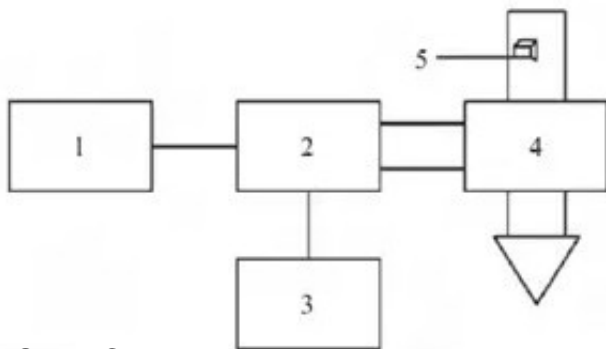
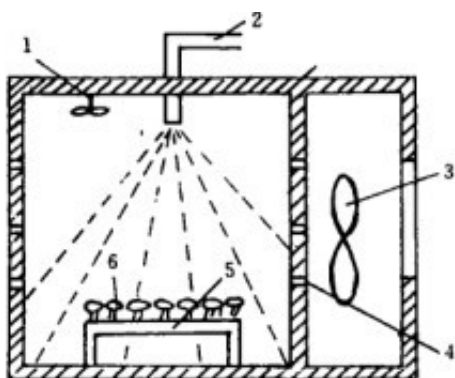


Research Progress on the Effects of Drying Methods on Chemical Constituents of Plant Products



ABSTRACT: The research progress on the effects of drying methods on chemical constituents of plant products was reviewed. The effects of conventional drying methods such as hot air drying, vacuum drying, [microwave drying equipment](#), sun drying, shade drying, freeze drying and combined drying methods such as Microwave-hot air, hot air-vacuum, freeze-microwave combined drying on the nutrients such as VC, protein, carotenoids, phenolic substances, volatile substances and polysaccharides in plant products were analyzed. The research of drying technology provides theoretical basis.

Key words: drying method, [plant microwave drying](#), chemical composition



Plant products have high water content, strong seasonality, concentrated market, and easy to rot and deteriorate if not handled in time. Drying is a common preservation method in plant processing. It can reduce water activity, inhibit enzyme activity and microbial growth, thus prolong the storage time of plant products at room temperature.

In drying process, whether or not heat participates or not, it will have different effects on plant products, causing changes in physical, chemical or biological properties, such as the structural, visual, rehydration and nutritional properties of plant products, and their nutritional characteristics will also be affected accordingly. Nutritional characteristics include not only protein, crude fiber and mineral. Fundamental nutrients, such as substances, also include

phenolic compounds, polysaccharides, volatile oils and other functional active ingredients. High temperature, oxygen, microwave and ultraviolet radiation during drying are important factors affecting the content and bioavailability of these compounds.

This paper reviews the latest research results on the effects of drying methods on the chemical composition of plant products, and summarizes the effects of conventional drying methods and combined drying methods on nutrient components such as VC, carotenoids and active components such as phenolic compounds, volatile oils and polysaccharides in plant products.

In this paper, the effects of common drying methods such as hot air drying, vacuum drying, microwave drying, sun drying, shade drying, freeze drying and combined drying methods such as Microwave-hot air, hot air-vacuum, freeze-microwave combined drying on the nutrient composition and active ingredients of plant products are emphatically analyzed, which provides a theoretical basis for the selection of drying methods of plant materials.

Drying is a common process in the processing of plant products. In recent years, more and more studies have been done on the effects of different drying methods on the physical properties and chemical components of plant products. However, the mechanism of the effects of different drying methods on plant products has not been fully studied. Many explanations of the changes in physical and chemical properties are only speculations, and most of them are not supported by relevant theories.

In addition, the research on combined drying is still in the aspect of process optimization and horizontal comparison, lacking of corresponding combined drying equipment, and can only stay in the laboratory research stage, unable to achieve industrial production. Therefore, we should pay more attention to the study of drying mechanism, explain the changes of physical and chemical characteristics reasonably, and provide theoretical support for the development of combined drying machinery.