Effect of Drying Method on Hypoglycemic Components of Momordica charantia

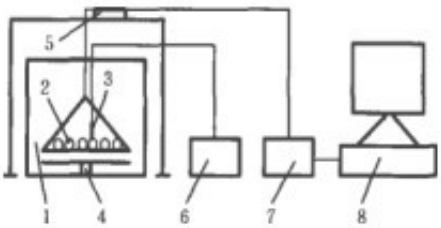
ABSTRACT: By discussing the effect of different drying methods on the content of hypoglycemic components in balsam pear, an ideal drying method was provided for the production of balsam pear health food. Biuret method was used to determine the polypeptide content of balsam pear, phenol-sulfuric acid method was used to determine the polysaccharide content of balsam pear, and spectrophotometric method was used to determine the saponin content of balsam pear.

The results showed that the microwave drying equipment had the best color of bitter gourd and less damage to its main sugar-reducing components; the freeze-drying bitter gourd had the worst color and more damage to its sugar-reducing components; the vacuum drying of bitter gourd took longer time, and the sugar-reducing components of bitter gourd were damaged more and the color was worse than that of hot air drying.

At the same time, in vitro experiments showed that dried Momordica charantia powder had obvious inhibitory effects on alpha-glucosidase and alpha-amylase. Hot air drying method can better preserve the sugar-reducing components of balsam pear, and is suitable for drying balsam pear during processing.

Key words: balsam pear microwave drying; saponins; polysaccharides; polypeptides

Momordica charantia is a climbing herb belonging to Cucurbitaceae, widely distributed in temperate, subtropical and tropical regions. A large number of studies at home and abroad show that balsam pear has the functions of lowering blood sugar, anti-virus, anti-cancer, anti-fertility and enhancing immunity, among which the effect of lowering blood sugar is especially concerned by people.



In recent years, scholars at home and abroad have done a lot of research on the hypoglycemic active ingredients such as saponins, polysaccharides and polypeptides in balsam pear. Sheng

Qingkai et al. isolated the polypeptide-P from Momordica charantia. The polypeptide was injected subcutaneously into diabetic mice. Blood samples were taken from tail vein 2 hours later to determine blood sugar. It was found that injection of polypeptide-P of Momordica charantia could significantly reduce blood sugar in diabetic mice.

Dong Ying et al. used water and alkali solvent to extract polysaccharide from Momordica charantia L. and then gave streptozotocin-induced diabetic mice. It was found that alkali extract of Momordica charantia L. could reduce blood sugar level and improve oral glucose tolerance in diabetic mice.

Shi Xuebing et al. studied the hypoglycemic mechanism of balsam pear saponins. It was found that balsam pear saponins had no inhibitory effect on the activity of alpha-glucosidase, but could significantly improve the oral glucose tolerance of normal and diabetic mice, restore the activity of islet beta cells, stimulate the synthesis of hepatic glycogen and inhibit the release of hepatic glycogen.

Bitter gourd tastes bitter, which is difficult for many consumers to accept, and its shelf life is relatively short. At present, it is mainly fresh food, which limits the development and utilization of bitter gourd. At present, balsam pear is mainly processed into low-sugar preserves, balsam pear juice or balsam pear tea.

In the processing of balsam pear, drying treatment is a very important way. In this experiment, different drying methods were used to treat balsam pear. The changes of saponins, polysaccharides and polypeptides in balsam pear before and after drying were compared. The best drying method was selected to provide an ideal method for the selection of drying methods in the development of hypoglycemic health food for balsam pear.