Optimal Hot Water Extraction Conditions of Mixed Herbs Extract Mixture Using Response Surface Methodology

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ABSTRACT

Human needs energy to maintain metabolisms, and these energy sources were uptake foods or nutritions. The most effective source was known for glucose among the nutrients, furthermore the glucose is an important source of energy for blood cells and control brain maintenences cells. But as food is plentiful and eating habits become more westernized, fast food and irregular meal times by works. Nowadays, diabetes were rapidly increased by malnutriton and obesity. Diabetes was the sixth highest on the list of causes of death in Korea, released by the Statistics Korea in 2015, which is considered a serious social problem for adult diseases.

Therefore, this study aims to establish the optimal hot water extraction conditions of mixed herbs extract mixture compounds that are effective in diabetes. The independent factors were extraction temperature (X1: 40-120℃), extraction time (X2: 2-10 hrs.), and the ratio of water to sample (X3: 40-200 mg/mL). Their effects were assessed on dependent variables of the extract properties, which included soluble solid contents, Brix of sample extract, total polyphenols content, total flavonoids content and DPPH Radical scavenging activity.

As a result, the content of total polyphenol content was the highest in No.12(6 hrs, 120℃, 67 mg/mL) and the highest total flavonoid contents was found in No.16(6 hrs, 80℃, 40 mg/mL). DPPH Radical scavenging activity showed the highest activity in No.7(8 hrs, 100℃, 100 mg/mL).

Key words : Response Surface Methodology, DPPH radical scavenging activity, total polyphenols, total flavonoids, mixed herbs extract

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