ANTIOXIDANT EFFECT OF GREEK-STYLE FERMENTED MILK ADDED WITH HERB EXTRACTS

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Introduction:
The consumption of fermented milk products are steadily increased in the world. Especially, it is revealed that Greek-style yogurt has many nutritional benefits, and many people are interested in it for healthy food. It is yogurt that has been strained to remove its whey, resulting in a thicker consistency than unstrained yogurt. Meanwhile, stevia is a sweetener and sugar substitute extracted from the leaves of the plant species Stevia rebaudiana Bertoni and has 200~300 times sweeter than table sugar, and it is known that it has various polyphenol compounds. Therefore, this study was carried out to evaluate the antioxidant activities and total polyphenol content of Greek-style yogurt increased in 12% solid content added with stevia leaf extracts for sugar substitute.

Methods:
Stevia leaf extracts as a sugar substitute for Greek-style yogurt were prepared by hot water (100°C) for 6 h 3 times, and by 70% fermented ethanol for 24 h at room temperature 3 times. The antioxidant activities were measured by radical scavenging effect of DPPH, ABTS and FRAP assay during storage. DPPH radical scavenging test was determined according to the method from Blois (1958). ABTS radical scavenging test was determined according to the modified from ABTS cation decolorisation assay method. Ferric antioxidant potential ability (FRAP) was measured according to the method from Benzi and Strain (1996). And also to identify the compound of substances, total polyphenol content was experimented using Folin-Dennis assay.

Results:
It was tendency to increase the DPPH radical scavenging ability as increase the added amount of stevia extracts in yogurt. Especially, DPPH radical scavenging ability was the highest with 58.21±0.37% when the extracts by fermented ethanol were added 1% in the yogurt at 15th day of storage. And DPPH radical scavenging ability was increased during storage. ABTS radical scavenging ability of extract added group were higher than control, and it increased as the addition of stevia increased. Also, the extracts by fermented ethanol added group was higher than that by water added group. However, it was not increased during storage unlike that of DPPH. FRAP was the highest with 3.96±0.31% on 1% extract by fermented ethanol added group in 5th day of storage. It is considered that the stock solution was diluted with water, and soluble antioxidant ingredients were more measured than DPPH and ABTS. The capability to scavenge free radical and total polyphenol content were the highest at GFE (Greek-style yogurt added with stevia extract 1% by fermented ethanol 70%) 1%.

Discussion:
According to the results on the experiments, antioxidant activities were significantly increased when high concentration of stevia extracts as functional source in Greek-style yogurt. Therefore, using stevia extracts gave antioxidant effects to fermented milk, and the fermented ethanol extraction was effective method to obtain it.

Keywords: Stevia extracts, Greek-style yogurt, Antioxidant effect, Probiotics, Fermented ethanol Extraction, DPPH

Citation: