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Investigation of the quality and stability in soybean flour (*Glycine max* L.) according to the storage conditions

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[Introduction]

Legumes have been widely cultivated throughout Asia and used as nutritious plants for a long time. The interest of legumes containing bioactive nutraceuticals is increasing in worldwide due to various health-promoting benefits. Especially, soybean (*Glycine max* L.) is easily accessible to people among legumes. Soybean have been used as an important source of protein and lipid. Thus, people have used it in a various form. But in case of soybean flour, there are some problems including rancidity. The longer the storage period becomes, the worse the rancidity of soybean flour gets. According to storage conditions, quality of soybean flour need to be investigated.

[Materials and Methods]

The raw and roasted soybean (cultivar. Saedanbaek) flour were packed in two types of packaging that are polyethylene (PE) and polypropylene (PP) film bags, respectively. The raw and roasted soybean flour are stored at 4, 20, and 45°C for 1 year. The acid value, conjugated diene value, peroxide value, *p*-anisidine value, thiobarbituric acid (TBA) value, and lipoxygenase activity of raw and roasted soybean flour were measured at the point of starting storing, and after 1, 2, 4, 8, 12, 24, 36, and 48 weeks. According to the storage conditions, the quality stability on the soybean flour was evaluated in terms of the rancidity of soybean flour.

[Results and Discussions]

Acid value of soybean flour except for roasted soybean flour at 45°C storage was higher in 2 or 4 weeks and decreased to 48 weeks ($p<0.05$). In case of conjugated diene value of raw soybean flour at 4°C and 20°C storage, it tended to decline from the beginning and showed the highest value in 36 weeks ($p<0.05$). Peroxide value of all raw soybean flour was the highest in 4 weeks except for PP film bag at 45°C storage. In 4°C and 20°C storage conditions, *p*-anisidine value of soybean flour was increased from beginning to the highest in 2 weeks and then tended to decline ($p<0.05$). Lipoxygenase activity of soybean flour in 4°C storage condition was decreased from 4 to 24 weeks ($p<0.05$). Lipoxygenase activity of raw soybean flour was significantly decreased from 8 to 48 weeks at 45°C storage ($p<0.05$). This study showed how the rancidity of the raw and roasted soybean flour progressed during different storage conditions. Thus, our findings can be used as base data to do a further study of finding and developing more stable storage conditions of the soybean flour.

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