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Studies regarding Dry Matter, Ascorbic Acid and Acidity Content in Chinese Cabbage (*Brassica campestris* var. *pekinensis*)

Enikő LACZI[1)], Alexandru Silviu APAHIDEAN[1)], Alexandru Ioan APAHIDEAN [1)], Tincuta GOCAN[1)]

[1)]University of Agricultural Sciences and Veterinary Medicine, Faculty of Horticulture, 3-5 Mănăştur Street, Cluj-Napoca, 400372, România; eniko.laczi@yahoo.com.

Abstract. Chinese cabbage (*Brassica campestris* var. *pekinensis,* syn *Brassica rapa* var. *pekinensis*), is a delicious vegetable that has been used extensively in Asian cooking for centuries. Being part of the *Brassicaceae* family it contents a lot of vitamins and minerals, as well as active compounds, whose properties on the health are well demonstrated. The studies regarding dry matter, ascorbic acid and the acidity content was realized in the spring of 2011, in the University of Agricultural Sciences and Veterinary Medicine from Cluj-Napoca. In the research were used five variants, four hybrids (‘Michihli’, ‘Kingdom 80’, ‘Nepa F1’ and ‘Vitimo F1’) and one variety (‘Granat’). After harvest some laboratory analysis were made to establish the mentioned features. To obtain more accurate results regarding the dry matter content in Chinese cabbage, this characteristic was analyzed in four different points of the leaves: in the top, in the middle of the leaf, and also in the starting point of the ribs and in the petiole. The average dry matter content of the five variants was 5.06%, the lowest percent (4.4%) being recorded at ‘Granat’ variety, while the highest value (5.63%) at ‘Nepa F1’ hybrid. The acidity content varied between 0.080 % (at ‘Granat’ variety) and 0.148 % (at ‘Vitimo F1’ hybrid), while the average content was 0.118%. The vitamin C content of Chinese cabbage after National Nutrient Database for Standard Reference is 27 mg/100 g fresh matter, although Jagdish et al. (2007) in their studies found that ascorbic acid content varied between 5.62-12.6 mg/100 g fresh matter. In this study the average vitamin C content was 44.0 mg/100, the highest value (59.84 mg/100 g) being registered at ‘Vitimo F1’ hybrid, the lowest one (24.64 mg/100 g) at Kingdom 80 hybrid.

Keywords: acidity, ascorbic acid, Chinese cabbage, dry matter, vitamin C

Introduction. Chinese cabbage (*Brassica campestris* var. *pekinensis,* syn *Brassica rapa* var. *pekinensis*), is a delicious vegetable that has been used extensively in Asian cooking for centuries. Large savoyed leaves with thick succulent midribs possess a sweet taste and crisp texture when eaten raw and it has a flavor somewhat milder than cabbage when cooked (Shattuck and Shelp, 2004).

Heading Chinese cabbage is a cold season, annual vegetable. It grows best under temperatures of 15-20°C (Kalb and Chang, 2005). Even if it is the main vegetable in China and a leading vegetable in Japan and Korea (Burt *et al.*, 2006), in Transylvania is a less known vegetable, and it is cultivated only by amateur gardeners. It has a great nutritional value, which is proved by the effectuated analysis.

Aims and objectives. The main objective of the present research is the determination of dry matter, ascorbic acid and acidity content of the five studied cultivars of Chinese cabbage using laboratory methods.

Materials and methods. The studies regarding dry matter, ascorbic acid and acidity content were as realized in the spring of 2011, in the University of Agricultural Sciences and Veterinary Medicine from Cluj-Napoca. In the research there were used five variants, four hybrids (‘Michihli’, ‘Kingdom 80’, ‘Nepa F1’ and ‘Vitimo F1’) and one variety (‘Granat’). After harvest some laboratory analysis were made to establish the mentioned features.

The dry matter content was measured using a pocket refractometer, following three important steps: verifying the work accuracy of the instrument, determination of soluble dry matter and correction of the results, taking in consideration the ambiental temperature.

Every fresh or processed fruit or vegetable presents a real acidity and a potential one. The sum of this two gave the total titrable acid, which in this case was titrated with sodium hydroxide.

The chemical methods of Vitamin C dosage are based on the reduction property of ascorbic acid, which is converted in dehydroascorbic acid through the oxidation process. The dosage was a volumetrically one, after what the titration was made with the following oxidative substances: iodine, potassium iodate, blue methylene.

Results and discussions. To obtain more accurate results regarding the dry matter content in Chinese cabbage, this characteristic was analyzed in four different points of the leaves: in the top, in the middle of the leaf, and also in the starting point of the ribs and in the petiole. The average dry matter content of the five variants was 5.06%, the lowest percent (4.4%) being recorded at 'Granat' variety, while the highest value (5.63%) at Nepa F1 hybrid.

The acidity content varied between 0.080% (at 'Granat' variety) and 0.148% (at 'Vitimo F1' hybrid), while the average content was 0.118%.

The vitamin C content of Chinese cabbage after National Nutrient Database for Standard Reference is 27 mg/100 g fresh matter, although Singh *et al.* (2007) in their studies found that ascorbic acid content varied between 5.62-12.6 mg/100 g fresh matter.

In this study the average vitamin C content was 44.0 mg/100, the highest value (59.84 mg/100 g) being registered at 'Vitimo F1' hybrid and the lowest one (24.64 mg/100 g) at Kingdom 80 hybrid.

Conclusions. 'Granat' variety registered low values of dry matter and acidity content, while high values of acidity and Vitamin C content was found at 'Vitimo F1', which make this hybrid more adequate for cultivating in Transylvanian Tableland specific conditions.

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