EVALUAREA COMPOZIŢIEI BIOCHIMICE A UNOR SELECŢII DE LONICERA FRUCTIFERĂ (*Lonicera caerulea*)

EVALUATION OF BIOCHEMICAL COMPOSITION OF SOME HONEYSUCKLE FRUITS SELECTIONS (*Lonicera caerulea*)

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Abstract

***Lonicera caerulea* var. *kamschatica*. L. is called "bluehoneysucle" in countries where it is cultivated; in this paper we call it "fruiting lonicera". This is one of the few species of *Lonicera* with edible fruits. *Lonicera* selections fruit trees obtained at the RIFG Pitesti have noted a number of features, such as early fruit ripening, winter frost resistance, adaptability to different climatic conditions, rich in anthocyanins berries and a high antioxidant activity. Biochemical analysis show contents of honeysuckle fruits with high antioxidant substances. There were analyzed 22 *Lonicera caerulea* selections, grown on soil that belongs to the type wet aluvisoil formed on fluvial deposits with clay and sand particle at the RIFG Pitesti. High content of vitamin C in some selections makes *Lonicera caerulea* to be comparable with most species rich in vitamin C. Selection SL 62 has accumulated the highest amount of vitamin C, and were significant differences compared to the other selections. The largest total anthocyanin content was obtained from the selection SL 59, significantly different from the other analyzed selections.**

Cuvinte cheie: vitamina C, antociani, acizi organici
Key words: vitamin C, total anthocyanins, organic acids

1. Introduction

Berries are one of the most important sources of biochemically active compounds in human diet (Fukumoto et al, 2000). They are a rich source of ascorbic acid and phenolic compounds, mainly phenolic acids, anthocyanins, proanthocyanidins and other flavonoids. These compounds cause pigmentation and fruits are beneficial to human health (Hummer, 2006; Bagchi 2004). Their biological activities include protection against rates of incidence and mortality of cancer (Doll, 1990), protection against mortality (Armstrong, 1975) due to ischemic heart disease. Serve antitumor (Bingham, 1990), antimicrobial (Puupponen-Pimia, 2001), anti-inflammatory and antiallergenic (Middleton et al, 1992) and antimutagenic properties (Edenharder, 1993).

Lonicera caerulea var. *kamschatica* (blue honeysuckle) (family *Caprifoliaceae*) is a species of shrub used in folk medicine in northern Russia, China and Japan (A. Huxley, 1992) due to its rich phytochemical content (Palíková et al., 2008). In northern Russia, the plant was introduced and cultivated on smaller areas, in Central Russia, the Urals, Siberia, and more recently in Canada and the United States (Mladin et al, 2011); it is less known for properties of edible berries (Svarcova et al., 2007).

The content of phenolic compounds in fruits is determined by several factors such as variety, agronomic management, climatic factors, stage of ripeness, time of harvest, storage conditions, and post harvest management (Castrejon et al., 2008).

Many results show that bluehoneysuckle clones differ greatly in terms of the ascorbic acid contents (67.7 - 186.6 mg / 100 g), and these values can be considered greater than of another fruit species appreciated for their high ascorbic acid content (Tunde, 2012).

The aim of this work was to determine the levels of total active biochemical compounds of honeysuckle fruit selections of ICDP Pitesti Maracineni.

2. Material and methods

The study was conducted in the experimental plot field of the RIFG Pitesti. Field experiment consisted of rows of *Lonicera* arranged in three repetitions. Soil is an aluviosoil wet type formed on fluvial deposits with clay and sand particle composition. The land for experience is a plain terrace of the Arges River. Regarding the physical and chemical properties of the soil, it is characterized by an acidic reaction (pH = 5.8), middle-humus (humus% = 2.48) in the `A` horizon and a low assimilable phosphorus (P_2O_5 = 14.5 ppm).Total soil nitrogen is low (Total nitrogen = 0.1%).Were assessed 22 blue honeysuckle

selections. The samples (approx. 200 g) were collected at the beginning of June month, in the early morning hours.

Water and total solids were determined by gravimetric method, by measuring water loss from heating to 105 ° C.

The content of the organic acid, expressed as % citric acid was analyzed by titration using 0.1 N sodium hydroxide.

Determination of the total anthocyanins was made by the spectrophotometric method. The principle of this method is to measure the maximum absorption (method Fuleki and Francis, 1968). Extraction of anthocyanins to the fruit was made using ethanol as a solvent extract acidified with hydrochloric acid. Extinction corresponding extracts were read at λ = wavelength of 535 nm using a Zeiss Jena spectrofotocolorimetric type. Expression of results was done in anthocyanins mg / 100 g fresh fruit.

Vitamin C expressed in mg / 100 g fresh fruit was determined by titrimetric method after the fruit extraction with ethanol acidified with hydrochloric acid.

3. Results and discussions

The average fruit weight to the studied blue honeysuckle selections was variable, ranging to 0.63 g/fruit to the SL 40 selection at 1.21 g/fruit to the SL 74 selection (Fig.1).

The fruits content in vitamin C at the studied blue honeysuckle selections, ranged by 63.87 to 92.45, the highest value was recorded by the SL 62 selection, and the lower value was recorded by the SL45 selection. The SL 62 selection has recorded differences between 69.08-89.98% versus to the other studied selections (Fig.2).

The fruits content in anthocyanins pigment showed the highest value (727.31 mg / 100 g) to selection SL 62. But the lowest value (216.16 mg/100g) was recorded to the SL 45 selection. The SL 45, SL 69, SL 38, SL 50, SL 67and SL15 selections showed the lowest values of anthocyanins pigment content, the values for all this selections was up to 242.64 mg/100 g fresh fruit, versus the SL62 selection the differences was till 88.23% (Fig.3).

The fruits content in organic acid, expressed as citric acid ranged within the limits of the values 1.50 to 2.57, the differences between the studied selections had classified the studied selections in eight statistical classes (Fig.4). The highest value (2.57%) was recorded at the SL 62 selection (Fig.4).

4. Conclusions

This study shows that the SL 62 has registered the highest values to all four quality fruit indicators. For that reason we recommend this selection for fresh consumption, and the other studied blue honeysuckle for processed use.

5. Acknowledgements

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Figures

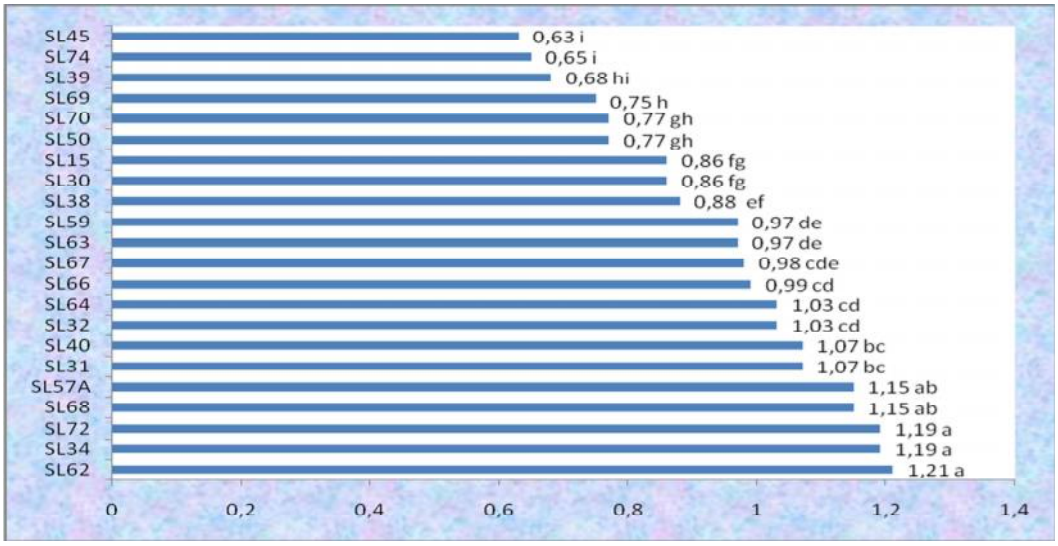

Fig. 1. The average fruit weight (g)

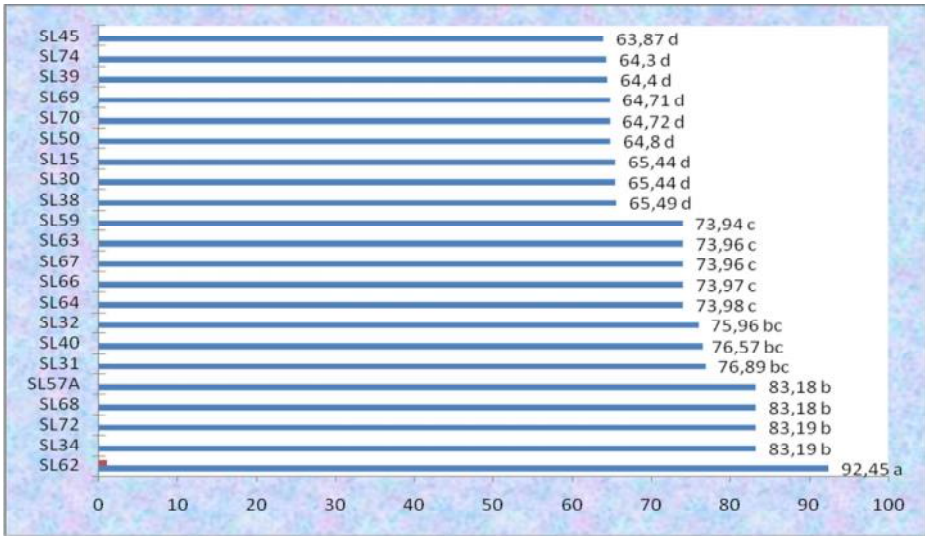

Fig. 2. The variability of the C vitamin (mg/100g fresh fruit) in berries to the studied blue honeysuckle

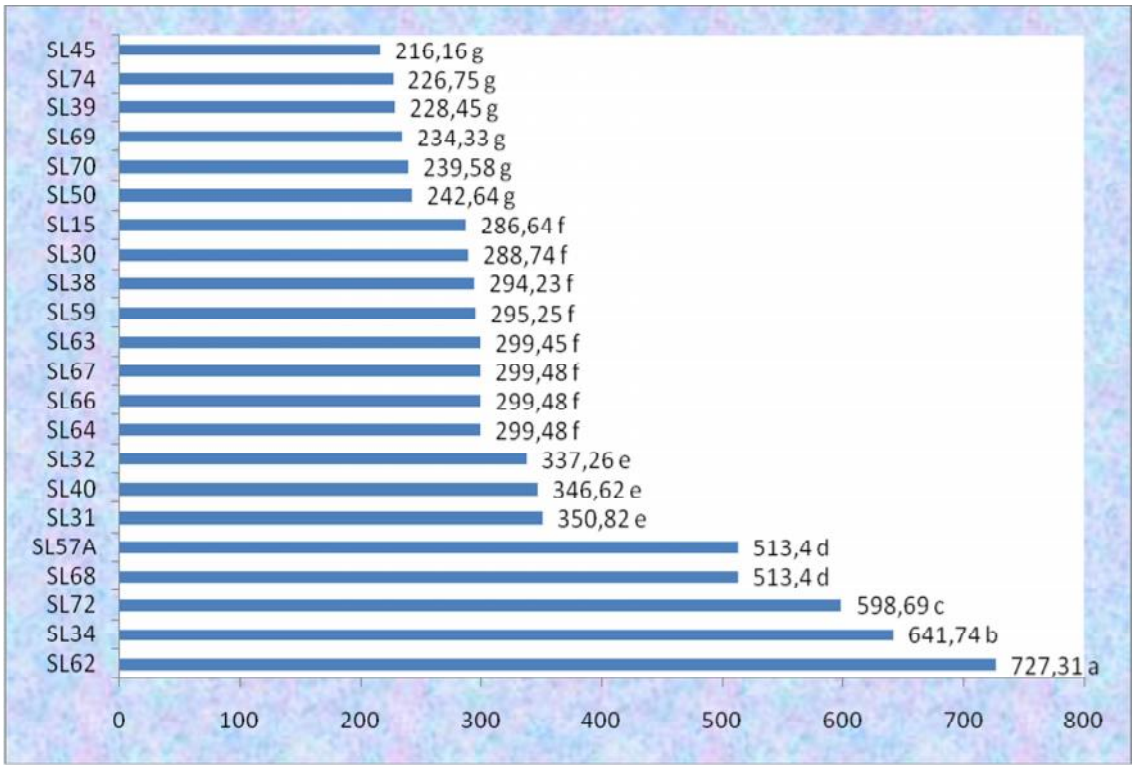

Fig. 3. The variability of the picment anthocyanins (mg/100g fresh fruit) in berries to the studied blue honeysuckle

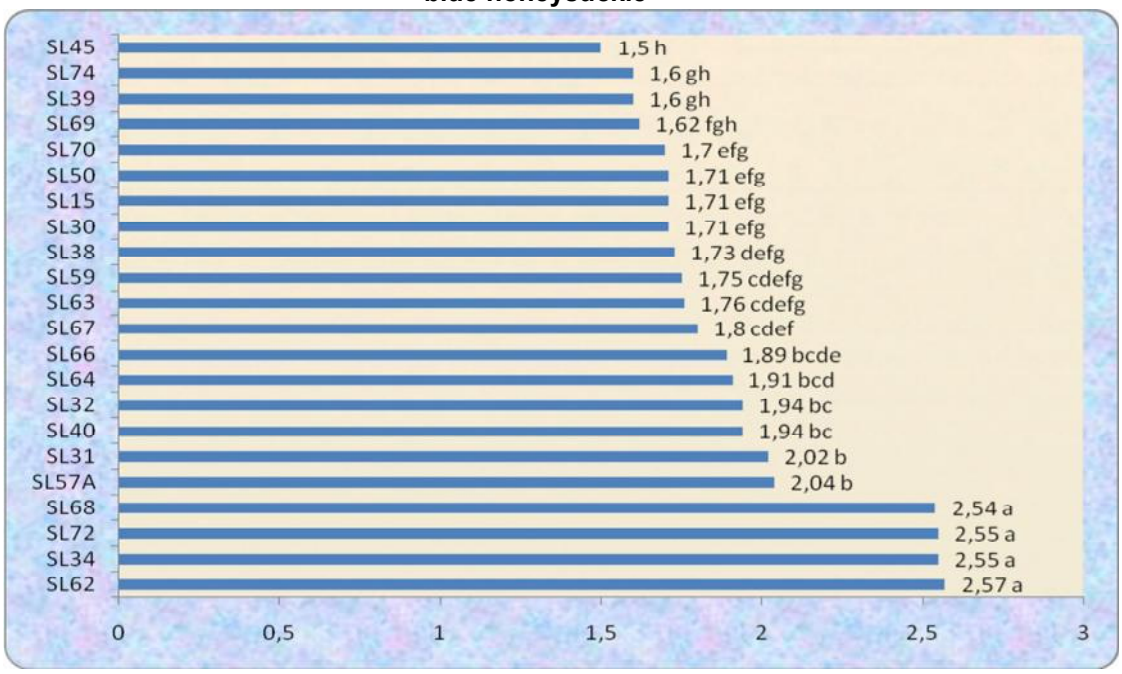

Fig. 4. The variability of the citric acid (%)in berries to the studied blue honeysuckle