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THE CONTENT OF MINERAL ELEMENTS IN *SOLANUM* SPP. FRUITS

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Introduction

Solanum plants have a healthy nutritional profile in form of minerals including calcium, iron and phosphorus, an appreciable amount of proteins, vitamin A and C, fat, fibre as well as sufficient amounts of methionine (Lu et al., 2011).

Solanum retroflexum also known as “sun-berry”. (Fig 1). Scientific studies have shown that *S. retroflexum* accumulates 2.9 mg per 100g-1 sodium, 890 mg 100g-1 potassium, 27 mg 100g-1 calcium, 24 mg 100g-1 magnesium, 1.10 mg 100g-1 iron, 0.69g 100g-1 zinc (Sepliakov L.V.et, al., 2014).

Solanum melanocerasum is also known as “garden huckleberry”(Fig 1). According to scientists, 100 grams of berries can be found in 100 g: 3.2 g of protein, 1.0 g of fat, 6.4 carbohydrates, 2.2 g of dietary fiber, ca 200 mg, p 54 mg, fe 0.3 mg, β-carotene 3.7 mg, ascorbic acid 24 mg. The amount of all substances depends on the age of the plants, soil moisture and fertilization. (Muthomusyimi, 2009).

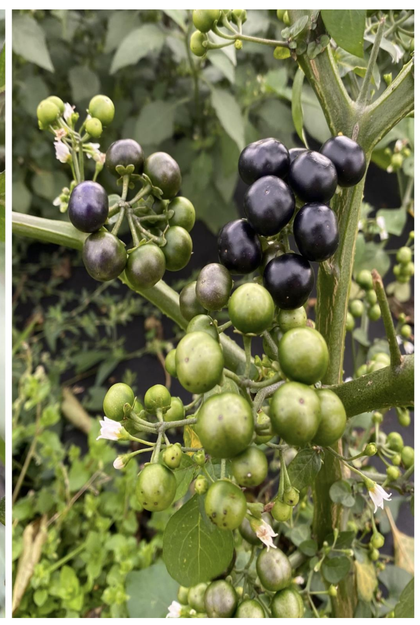

Figure 1.
S. retroflexum *S. melanocerasum*

Methodology

Two genotype of *S. melanocerasum* and *S. retroflexum* were cultivated at Kaunas, Noreikiškės, Mariaus Stavecko farm in 2020-2021. Germination of seeds began in early March in greenhouse. In May, the strongest seedlings was selected and transferred to 10 l plastic bags with substrate. Substrate data: pH: 5.5-6.5; amount of fertilizer applied (fertilizer NPK 14:10:18) 2.0 kg / m^3.

Mineral contents determination (Fe, B, Na, Mg, Al, P, K, Ca, Ti, Cr, Mn, Cu, Zn, Pb) from berries samples were carried out using a CEM MARS 6® (Matthews, NC, USA) digestion system equipped with 100 mL Teflon vessel. Digested samples were analysed by means ICP-MS (ThermoFisher Scientific, USA).

Results

The results of mineral composition presented in Table 1. The mineral elements such as P - 2733.99, K - 25462.01, Mg - 1747.95, Ca - 844.75, Fe - 398.94 mg kg^{-1} were dominated in *S. retroflexum* berries. Highest levels of Na - 15.51 and Al - 7.10 mg kg^{-1} was determined in *S.melanocerasum* berries. .

Table 1. Mineral composition of S. *retroflexum* and S.*melanocerasum* berries

Mineral elements	Content mg kg^{-1}	
	S. Retroflexum	S. Melanocerasum
Macroelements		
P	2733.99±101.22a	2209.28±91.56b
K	25462.01±98.21a	19746.93±76.34b
Mg	1747.95±73.51a	1378.95±58.64b
Ca	844.75±61.20a	176.65±28.29b
Fe	398.94±21.3a	115.60±11.8b
Al	3.22±0.23b	7.10±1.24a
Na	0.00±0b	15.51±0.62a
Microelements		
Cu	50.39±6.32a	1.79±1.23b
Zn	26.44±3.11a	19.78±2.21b
Mn	14.25±2.22a	10.90±1.24b
Ti	6.98±1.01a	0.00±0b
Pb	6.17±0.98a	1.78±0.09b
B	3.37±0.21a	0.00±0b
Cr	0.00±0b	0.18±0.02a

Main conclusion

The results showed that the amount of minerals in berries varied depending on the genotype. *S. retroflexum* had a higher content of macro and micro elements compared with *S. melanocerasum* berries.