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NOTE

Comparison of Trace Elements Contents in Purple Potato with Common Potato by ICP-MS

YANBEI ZHANG[1], YAXIONG LI[2] and YUKUI RUI[1,*]

[1]College of Resources and Environmental Sciences, China Agricultural University, Beijing 100193, P.R. China
[2]Gold seed industry Co., Ltd, Daxing District, Beijing 102600, P.R. China

*Corresponding author: Fax: +86 10 62731016; Tel: +86 10 62732574; E-mail: ruiyukui@163.com

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Purple potato is a new and popular food and the contents of trace element in purple potato have not been reported. Eleven kinds of trace elements were investigated in purple potato and compared with common potato planted in the same site under the same conditions. The results showed that the purple potato can absorb more Ca and Mn than common potato and most of the heavy metals including Cr, As, Se, Mo and Cd in common potato were much higher than those in purple potato, which indicated that purple potato is good food for human healthy.

Key Words: Purple potato, Trace elements, ICP-MS, Food nutrition.

Purple potato, a new food, is more popular because it contains much more anthocyanins which have many nutritional and healthy effects, such as antioxidant, eliminating free radicals, health, antiaging and anticancer. So most researches about purple potato were focused on anthocyanins[1,2].

On the other hand, the trace element as an important part of nutrition and food safety assessment, has scarcely been investigated in potato, especially purple potato has not been reported. To promote the healthy development of purple potato, it is important to determine the content of trace elements in purple potatoes and to compare with the common potatoes.

ICP-MS, as the latest method to detect mineral and trace elements, can precisely and accurately determined many elements simultaneously[3,4]. In this paper, mineral and trace elements Ca, Mn, Fe, Zn, Cu, Cr, As, Se, Mo, Pb and Cd in purple potatoes and common potatoes planting at the same soil and same management conditions by ICP-MS, in order (a) to determine the contents of mineral and trace elements in purple potatoes, (b) to evaluate the nutritional characteristics of purple potatoes by comparing with common potatoes. Purple potato was introduced from South Korea, the yellow potato were the common cultivar bought from market of Lishu county in Jilin province, northeast of China. The difference of appearance of purple potato and common potato was showed in Fig. 1.

Experimental method: The two cultivars were planted in the same site under the same conditions. The preparation and instrument parameters were referred to previous methods[5,6].

Fig. 1. Outward appearance of purple potato and common potato

Contents of beneficial elements in purple potato and common potato were showed in Table-1. The results indicated that Fe, Cu and Zn in common potato were higher than in purple potato, the contents of Ca and Mn in purple potato were higher than common potato.

TABLE-1
CONTENTS OF BENEFICIAL ELEMENTS IN PURPLE POTATO AND COMMON POTATO (μg/g FW)

Elements	Purple potato	Common potato
Ca	52.11	46.68
Mn	1.43	1.23
Fe	4.50	9.82
Zn	3.17	3.25
Cu	1.44	1.76

Contents of heavy metals in purple potato and common potato were showed in Table-2. The results were different from that of beneficial elements. Most of the detected heavy metals

Cr, As, Se, Mo and Cd in common potato were much higher than those in purple potato except Pb.

TABLE-2
CONTENTS OF HEAVY METALS IN PURPLE POTATO AND COMMON POTATO (ng/g FW)

Elements	Purple potato	Common potato
Cr	2.10	15.54
As	0.59	7.30
Se	11.87	12.44
Mo	12.09	17.35
Cd	27.31	44.53
Pb	16.08	5.31

Conclusion

The purple potato can absorb more Ca and Mn than common potato and most of the detected heavy metals in common potato were much higher than those in purple potato, which showed that purple potato is good food for human healthy.

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