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## **Diagnosis of solanine toxicant in potato tubers using laser reflectance processing and digital camera methods**

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### **Abstract**

**Background:** All organs of potato plants include two glycoalkaloids, alpha-solanine and alpha-chaconine, often called “solanine”. The recommended level of solanine is about 0.2 mg/g (fresh weight) of potato and its growth from the recommended level causes human beings and live stocks poisoning and might lead to their death. The purpose of this study is to check the ability of non-destructive ways like laser and digital camera in recognition of solanine toxicant in potato and comparing accuracy of two methods with each others.

**Materials & Methods:** Both methods are based on the analysis of pictures, taken from potato’s surfaces, but in laser application, laser beam at 635 nm and beam size of 2 mm has been projected to different parts of potato’s surfaces and after taking the pictures, laser reflectance feature has been measured.

**Results:** Results showed that the accuracy of laser method than digital camera, especially in situations that solanine content has been decreased at the surface of potato tubers, is higher, as coefficients of determination for laser and digital camera methods were reported about 92% and 83%, respectively. Although, it was showed that processing time in laser method is shorter and it can be used in sorting systems for grading potatoes based on the safe level of natural toxicants in them.

**Keyword:** solanine, laser, image processing, potato