



# Natural products application: Health, Cosmetic and Food

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## PHYSICAL PROPERTIES OF 29 COLORED POTATO VARIETIES

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The use of different varieties of potatoes (*Solanum tuberosum* L.) with different colors may be appealing to consumers, namely in terms of their visual appearance, allowing their use as “chips” and other ready-to-eat snacks. This work studied the physical properties of 29 varieties of colored potatoes, analyzing their external color and the different dimensions of texture. The external color was measured with a portable colorimeter, analyzing the CIELab color space according to the L\* (lightness), a\* (red-green) and b\* (blue-yellow) coordinates. The texture was determined using a “texture profile analysis” assay allowing the classification of their hardness, adhesiveness, springiness, cohesiveness and resilience. The samples were classified through an analysis of variance using Tukey’s test as a post-hoc, and finally were subjected to a linear discriminant analysis for further discrimination based on the studied parameters. According to the obtained results, the color of the potatoes showed significant statistical differences, although many of the samples were related to each other. The sample with the darkest color was “Blaue veltlin” variety, with an L\* of 27.8, whereas the sample with the lightest colour was “Blaue ajanhuiri” variety. In terms of the values of parameter a\* the cultivar with the greenest tone was also the “Blaue ajanhuiri”, while the one closer to the red quadrant was “Purple from Peru”. Finally, the analysis of parameter b\* showed that “Blaue Neuseeländer” sample was the one with the highest blue tone and “Purple fiesta” the one with the highest intensity of yellow. Regarding the different texture dimensions, the samples showed homogenous values. All samples revealed no statistical difference for springiness, whereas regarding adhesiveness, the sample “Purple from Congo” was the most adhesive at -144 g/sec and “Linzer blaue” the less adhesive at -15 g/sec. Concerning the hardness parameter, “Blaue Anneliese” and “Blaue neuseeländer” were the samples with the hardest and softest texture, respectively. In addition, the most cohesive sample was “Pink from Bolivia”, whereas the least cohesive one was “Linzer blaue”. Chewiness had three different levels of significant difference with “Blaue Anneliese” being the least chewy and “Black princess” the most, while for resilience, the least resilient were “Pink from Bolivia” and “Hermanns blaue” and the most resilient was “Linzer blaue”. In terms of the linear discriminant analysis, the first two of five functions described 84.8% of variability (function 1 – 72.0%, function 2 – 12.8%), while the varieties that presented the highest variability were “Lilly rose”, “Red salad potato”, “Purple from Peru”, “Königspurpur” and “Highland burgundy”. In conclusion, the presented results showed a great variability among the tested potato varieties indicating that these could dictate the different uses of the final food product.

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