Vegeterian "sausages" with the addition of grape flour

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Introduction: Vegan sausages with the addition of grape flour represent the ways to reduce the intake of processed meat and at the same time increase the intake of a healthy substance of plant origin. Grape flour obtained from grape marc as a by-product of wine production is a source of many bioactive substances, such as antioxidants and polyphenols. The aim of the study was to evaluate chemical, physical, and sensory properties of sausages produced with the addition of grape flour.

Materials and methods: The study was conducted by vegetarian sausage production: 6 batches of sausages with different concentrations of grape flour (0 %, 1 %, 3 %, 7 %, 10 % and 20 %) were produced. The base of vegetarian sausages consisted out of dried tomatoes, sunflower and pumpkin seeds. The following analyses were used for the evaluation of vegetarian sausages: ferric reducing antioxidant power assay (FRAP), 2,2′-Azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) diammonium salt (ABTS), total polyphenolic content, total protein content, textural and sensory parameters.

Results and discussion: Based on sensory evaluation, vegan sausage with 3 % addition of grape flour was selected as the most suitable, according to the panelists. The texture parameters of the sample with 3 % addition of grape flour were also advanceable in comparison with others since the sample with 20 % addition of grape flour was too brittle, crumbled and overall had the lowest acceptance level of all evaluated products. The antioxidant activity evaluated by ABTS and FRAP method increased with a higher addition of grape flour. The samples with 3 % of grape flour had the following ABTS and FRAP values: 9.23 ± 0.03 % and 46.41 ± 0.15 μmol/g, respectively. The samples without the grape flour addition had 7.94 ± 0,13 % and 39,18 ± 0,15 μmol/g, ABTS and FRAP, respectively. Consequently, the addition of grape flour resulted in higher total polyphenol content, though slight decrease of protein content was noticed too.

Conclusions: The addition of grape flour to vegan sausages resulted in increased antioxidant activity and increased polyphenol content as expected. The results of this study confirm that the addition of grape flour to vegan sausages is nutritionally beneficial for consumers because it increases the antioxidant activity and polyphenols content. The sustainability of the product is also achieved using the grape flour since it is a waste material generated worldwide during grape processing.