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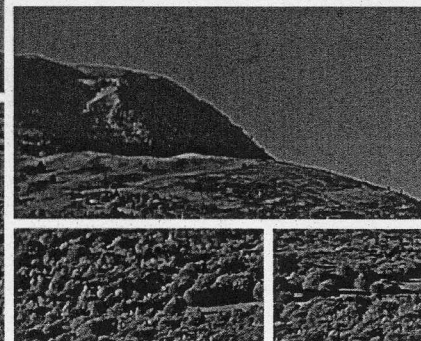
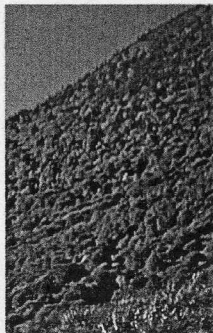
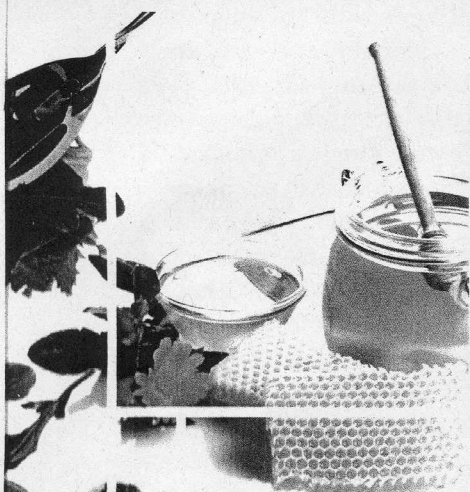


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Title: ACCURATE IDENTIFICATION AND PROFILING OF ELLAGITANNINS IN STRAWBERRIES AND WOODLAND STRAWBERRIES: THE INFLUENCE OF CULTIVAR ON THE CONCENTRATION AND COMPOSITION OF ELLAGITANNINS.

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Abstract: Of the most commonly consumed berries, strawberries (*Fragaria x ananassa* Duch.) are the most popular choice with consumers, being eaten both fresh and frozen, as well as in different processed products. Although the composition of strawberry fruit has been extensively studied, especially for the most abundant phenolic compounds, ellagitannins and in detail agrimoniin has been only recently univocally identified as one of the most abundant phenolic compounds in strawberry (Vrhovsek et al. 2012). This class of natural polyphenols recently gained much attention in light of the experimental evidence of their anticancer activities, antiproliferative properties, and antibacterial activity on intestinal pathogens. Furthermore agrimoniin is a known bioactive compound, which has been used for treatment of diarrhea and haemorrhaging and reported to have antitumor properties. Its presence as the main ellagitannin in both strawberry and woodland strawberry fruit is therefore noticeable. Of fruit containing ellagitannins, strawberries are the most widely consumed, and agrimoniin is suggested to be one of the most widely present ellagitannin in the human diet (manuscript in preparation)

The establishment of an HPLC protocol for the separation of the ellagitannins (Gasperotti et al. 2010), and the isolation and characterisation of the main ellagitannins and ellagic acid derivatives, allowed us an accurate quantification of ellagitannins and ellagic acid conjugates in 6 different varieties of strawberry and in 2 woodland strawberry. The structural characterization was obtained by QTOF-HDMS in order to discriminate the different oligomeric form or the differences between the ellagitannins with similar building block units. The presence of 23 ellagitannins and 3 ellagic acid conjugates in the strawberry extracts was confirmed among the strawberry cultivars and woodland strawberry types.

Woodland strawberries were the richest in terms of absolute concentration of ellagitannins and number of ellagitannins. Beside that, different cultivars of strawberries differ significantly in the amount and also profiles of ellagitannins. These data give evidence that more precise information about the fruit composition in term of their nutritional relevance needs to be taken into account in food metabolomics studies and their application to nutritional research. The attention of the consumer needs to be moved in the direction of the consumption of more nutritional relevant cultivar.

Agrimoniin, together with the other strawberry ellagitannins and ellagic acid derivatives characterised in this study, deserve further attention since they are expected to play an important, yet still largely unexplored, role in the relationship between healthy effects and the consumption of strawberries in humans.

Literature:

Vrhovsek et al. 2012, JAF, DOI: 10.1021/jf2052256

Gasperotti et al. 2010, JAF, DOI: 10.1021/jf904543w