Extraction Of Capsaicinoids And Carotenoids From Hot Paprika Using Maceration Technique

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Paprika, sweet or hot paprika varieties are the most popular food additives, which are variable for their sensory attributes of aroma, colour, pungency or ‘hotness’.

Capsaicinoids namely capsaicin are active principles and the main reason for the paprika pungency. In additional to these culinary properties, capsaicinoids present many biological activities. They act as powerful antioxidants, possess anti-mutagenic and anti-tumoral properties, function as topical analgesics against pain, stimulate the cardiovascular and respiratory systems, etc.

Also, the paprika fruits are the perfect source of carotenoids which are characterized with important colouring and nutritional capacity. Beside the features of good food colorants the carotenoids have significant health benefits, potentially due to their antioxidant effects.

In this study were established appropriate conditions for extraction of hot paprika (Capsicum annum sp. Microcarpum L.) using maceration technique. Ethanol, methanol and n-hexane were utilized as extraction solvents, varying the temperature from 30°C to 60°C for each solvent, at 1h time of extraction, 0.25 mm paprika particles size and 1:20 sample/solvent ratio. The extraction efficiency was expressed by the following yield of oleoresins, content of capsaicin, capsanthin, and ratio of red/yellow colour fraction in the oleoresins.

The obtained results shown that the highest yields of oleoresins are obtained using methanol. The differences of the oleoresins yields obtained by methanol, varying the temperature from 30°C to 60°C, are not significant. The highest content of capsaicinoids expressed as capsaicin is determined in the oleoresin performing paprika extraction on 60°C with methanol, at 1h extraction time, 1:20 sample/solvent ratio and 0.25 mm paprika particles size. The capsanthin content as a main representative in the paprika colours is highest in the oleoresin extract obtained with n-hexane (60°C, 1h, 1:20, 0.25 mm). The investigated extraction parameters have shown the same influence on the ratio of red/yellow colour fraction and on the capsanthin content in the oleoresins from the hot paprika.