Variations in Capsaicinoids Content of Hot Pepper Extracts

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ABSTRACT

Variations in the capsaicinoids content of hot pepper extracts were determined from 90 accessions of Capsicum. The objectives of the present investigation were 1) to quantify the major capsaicinoids in fruits of Capsicum frutescens, C. baccatum, C. annuum, and C. chinense from different geographic regions; 2) to determine the most suitable procedure for extracting total capsaicinoids; and 3) to identify potential candidates for the mass production of capsaicinoids, or for the breeding of varieties with high levels of total capsaicinoids.

INTRODUCTION

Capsaicinoids are low molecular weight pungent compounds with a wide range of beneficial effects on human health [1, 2]. They are found in the fruit of Capsicum species and have a variety of medicinal uses. Capsaicinoids can cause transient pain and burning sensation in the oral cavity, and these effects are monitored using capsaicinoids content in the fruit of these accessions. The objectives of the present investigation were 1) to quantify the major capsaicinoids in fruits of Capsicum frutescens, C. baccatum, C. annuum, and C. chinense from different geographic regions; 2) to determine the most suitable procedure for extracting total capsaicinoids; and 3) to identify potential candidates for the mass production of capsaicinoids, or for the breeding of varieties with high levels of total capsaicinoids.

MATERIALS AND METHODS

Fresh from 30 accessions of Capsicum annuum, 10 accessions of C. baccatum, 10 accessions of C. chinense, 10 accessions of C. pubescens, and one accession of C. frutescens were screened for their capsaicinoids content using gas chromatography (GC/NPD). Fresh fruits of C. baccatum, C. annuum, and C. chinense were selected from the USDA Capsicum germplasm collection. All selected accessions were screened for their capsaicinoids content using gas chromatography (GC/NPD).

RESULTS AND DISCUSSION

Capsaicinoids concentrations varied between accessions of the same species. In most cases, capsaicin concentrations were higher than dihydrocapsaicin, and total capsaicinoids content (capsaicin plus dihydrocapsaicin) was lower than capsaicin, dihydrocapsaicin, and nordihydrocapsaicin. Hence, no further efforts were made to quantify dihydrocapsaicin and nordihydrocapsaicin in the fruit.

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CONCLUSION

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