Determination of the heat level of selected chile crops and New Mexican chile products by high performance liquid chromatography (HPLC)

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ABSTRACT

The pungency of chiles is primarily determined by the constituent capsaicinoids (norhydrocapsaicin, capsaicin and dihydrocapsaicin) in the chile crop or any chile product. Scoville Heat Unit (SHU) value is a quantitative descriptor of the pungency of chile and calculated with respect to the amount of capsaicinoids available in the sample. Currently there are no reported Scoville Heat Unit ratings for New Mexican chile products. Here in we describe a simple HPLC method to determine the capsaicinoids content, hence the SHU of some New Mexican chile products. In a simple isocratic HPLC method, pre-extracted capsaicinoids were captured on a Supelco Discovery^{R} HS C18 column and detected using a fluorescence detector. Eluting capsaicinoids were identified by retention times and quantified by peak areas. Individual SHUs' were calculated using an equation derived from the standard calibration plot, heat factors and response factors of the relevant capsaicinoid. The sum of the individual SHUs' is expressed as the total SHU. The results obtained were compared with a hedonic testing with a panel of untrained assessors to analyze the heat level of the chile products from mild, medium to hot by an organoleptic test. This study shows the applicability of this method to any chile containing food product to quantify the SHU value.

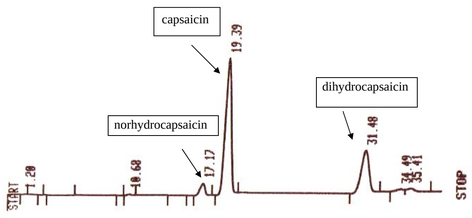

Figure 1. Chromatogram of natural capsaicinoids