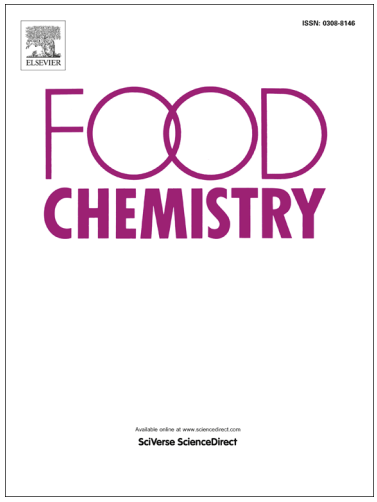

A sensitive HPLC-MS/MS screening method for the simultaneous detection of barley, maize, oats, rice, rye and wheat proteins in meat products

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A sensitive HPLC-MS/MS screening method for the simultaneous detection of barley, maize, oats, rice, rye and wheat proteins in meat products

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Abstract

The use of grain proteins in various types of meat products is common practice. A reliable detection of these food ingredients is required to control specifications and regarding food fraud and allergenic potential. Consequently, a sensitive HPLC-MS/MS method for the simultaneous detection of barley, maize, oats, rice, rye and wheat proteins in meat products was developed. After protein extraction and tryptic digestion, three to four selected marker peptides for each grain species were measured by HPLC-MS/MS. Emulsion-type sausages with grain-based protein concentrations in the range of 5–1000 mg/kg and blank values were produced. The limits of detection of the method were < 5 or < 10 mg grain protein/kg meat product for each grain species and no false-positive or -negative results were obtained. The detectability of the marker peptides only slightly decreased after storage and grilling of sausages, whereas the influence of the canning process was noticeably higher.

Keywords

Gluten; maize; rice; tryptic marker peptides; HPLC-MS/MS; meat adulteration

1. Introduction

The addition of foreign proteins to meat products (especially emulsion-type sausages) is a very common practice. In addition to soybean and milk proteins, wheat gluten is most