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spices & herbs

**ABSTRACTS**
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# SPICES & HERBS – A Risk-Free Taste Experience?

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### 3.14 Meta-analysis of irradiation data of bacteria in spices and herbs

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**Introduction:** Spices and herbs are natural dried components or mixtures thereof; used in foods for flavouring, seasoning and imparting aroma. Currently in the EU the most consumed spices are pepper, paprika and pimento (allspice), whereas the most consumed herbs are thyme and oregano. Despite their low water activity, which inhibits microbiological growth, spices and dried herbs can be naturally contaminated with large numbers of microorganisms, among them several pathogenic species and toxigenic moulds, for example, *Salmonella* spp., *Escherichia coli*, *Clostridium perfringens*, *Bacillus cereus* and aflatoxigenic *Aspergillus* spp. Spices and herbs are therefore treated for reduction of microbial load.

**Purpose:** The purpose of this study is to identify factors influencing inactivation of pathogenic bacteria by irradiation.

**Methods:** Meta-analysis on the published data available on irradiation was performed and trends were tested for their significance with statistical tests.

**Results:** Inactivation data collected showed high variability in reduction kinetics. Irradiation treatment (gamma or electron beam) and product physical state (whole, ground or powdered) were not found to significantly influence reduction. Gram positive bacteria were significantly more resistant than Gram negative; subsequently spores were significantly more resistant than vegetative cells.

**Significance:** Irradiation may not be able to significantly reduce spores and Gram positive bacteria in spices and dried herbs.

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