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Suggestion for a subdivision of processed meat products on the Danish market based on their content of carcinogenic compounds

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Abstract

Carcinogenic effects in humans are ascribed to processed meat by organisations such as International Agency for Research on Cancer, World Cancer Research Fund and American Institute for Cancer Research. However, the term 'processed meat' covers a heterogenic group of products whose content of potential hazards differ considerably. To improve estimates of associations between processed meat intake and cancer risk we investigated ways to divide processed meat into subgroups that more precisely reflects its carcinogenic characteristics.

We collected ingredient lists and declarations of salt content for more than 1000 processed meat products on the Danish market and combined the information with knowledge related to processing parameters. Some compounds that could affect the products' carcinogenic characteristics, alone or in combination, were evaluated and compared for 12 types of processed meat products, and we suggest subgrouping of processed meat with similar level of carcinogenic potential, which could improve the understanding of the cancer risk associated with processed meat intake in scientific human studies.

Keywords

Cancer, haem iron, nitrite/nitrate/N-nitroso compounds, PAH, HCA, epidemiology

1. Introduction

Several cancers are multifactorial, among others affected by lifestyle and diet. The International Agency for Research on Cancer (IARC) has evaluated processed meat's possible carcinogenic effect (IARC, 2018). IARC concluded that processed meat should be classified as 'carcinogenic to humans (Group 1)' based on "sufficient evidence" in humans for the carcinogenicity of consumption of processed meat and "moderate" mechanistic evidence. Likewise the World Cancer Research Fund and American Institute for Cancer Research (Continuous Update Project) conclude that there is "convincing evidence that consumption of processed meat cause colorectal cancer" (World Cancer Research Fund/American Institute for Cancer

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