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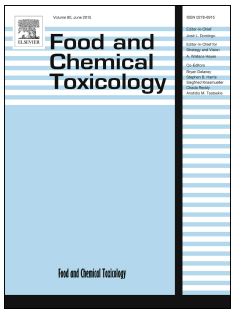

Caramel color safety – An update

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Caramel Color Safety – An Update

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Abstract

Caramel color has been used in foods and beverages for over 150 years and is globally regulated as a color additive. The four distinct classes of caramel color (Plain Caramel, Sulfite Caramel, Ammonia Caramel, and Sulfite Ammonia Caramel) are well characterized and each have specifications that take into account processing variables including reactants that can give rise to low molecular weight constituents (e.g., 4-MeI and THI) that may have toxicological significance for evaluating safety.

Extensive safety testing has been conducted with the different classes of caramel color and its constituents, including toxicokinetics, genotoxicity, subchronic toxicity, carcinogenicity, and reproductive/developmental toxicity studies. In addition, data is available on uses and use levels that have been used to estimate intakes of caramel colors and their constituents. No Observable Adverse Effect Levels (NOAEL) have been identified for all classes and Acceptable Daily Intakes have been established to ensure safety of use. Available studies support a conclusion that caramel colors are not genotoxic or carcinogenic, and exposure estimates indicate that intake of caramel colors and constituents do not pose undue safety risks. This update summarizes available relevant safety studies and authoritative reviews on caramel colors and its toxicologically important constituents, 4-MeI and THI.

Keywords: caramel colour, sulfite caramel, ammonia caramel, sulfite ammonia caramel, 4-Methylimidazole (4-MeI), 2-acetyl-4(5)-tetrahydroxybutylimidazole (THI)