Abstract

The possibility that structurally unrelated food additives could show either joint actions or interactions has been assessed based on their potential to share common sites and mechanisms of action or common pathways of elimination. All food additives approved in the European Union and allocated numerical acceptable daily intake values were studied, initially based on the reports by the FAO-WHO Joint Expert Committee for Food Additives. Target organs were identified based on the effects reported at doses above the no-observed-adverse-effect level (NOAEL) in animal and human studies. The descriptions of the pathological and other changes reported were used to assess whether different additives, sharing the same target organ, would produce a common toxic effect. In all but a very few cases, the possibility of joint actions or interactions could be excluded on scientific grounds. The exceptions were on the liver (curcumin, thiabendazole, propyl gallate, and BHT), the kidney (diphenyl, o-phenylphenol, and ferrocyanide salts), the blood (azorubine and propyl gallate), and the thyroid (erythosine, thiabendazole, and nitrate). Toxicokinetic interactions were considered unlikely because of the low dosages involved, the diverse nature of the routes of metabolism and elimination, and the fact that enzyme induction or inhibition would have influenced selection of the NOAEL. Many of those additives which could not be excluded from showing joint actions or interactions would have low intakes; in some cases they were alternatives for the same application, thereby further lowering the combined intake. In consequence, joint actions or interactions between additives do not represent a significant health concern.

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