Summary and conclusions

In this guide

113. Turmeric is the common name for the rhizome (underground stem) of Curcuma longa L., a perennial herb cultivated in tropical and subtropical regions of the world.

114. Curcumin (E 100) is a dicinnamoylmethane dye obtained from turmeric authorised as a food additive in the EU (and in the UK). It has been evaluated by JECFA, the SCF and EFSA. An ADI of 0 - 3 mg/kg bw was established based on a reproductive toxicity study by JECFA in 2004 (FAO/WHO, 2004a) and was confirmed in the evaluation by EFSA in 2010.

115. The consumption of turmeric and/or curcumin either raw, powdered or in supplements has become increasingly popular due to the purported health benefits.

116. Curcumin has low bioavailability, however, in supplements, synthetic forms of curcumin or chemical alterations are sometimes used in an effort to increase

its bioavailability, thus potentially altering its toxicity profile. The claim of many supplements that piperine improves the bioavailability of curcuminoids is questionable with high uncertainty. Ten of the 15 supplements recently surveyed in 2021 contained piperine, 6 of them at > 1% concentration.

117. Consumption of turmeric/curcumin as part of the diet from its use as a food additive or as a spice generally leads to exposures that are within the dietary ADI using the 2010 and the 2014 EFSA dietary exposures. However, when consumed in high quantities such as for its purported health benefits, or via the intake of supplements, occasional exceedances of the ADI can occur. In a recent curcuminoid survey of 15 supplements, when following the dosage advice on the label, 2 of these would lead to exposures above the ADI. It is concluded that if consumption was based on the label guidance there may be minor exceedances of the dietary ADI, but this should not pose a significant risk to the population.

118. The Committee have reviewed all available data regarding recent reports of hepatoxicity and have concluded that, despite the limited data, there is reasonable evidence for a link to turmeric consumption because the effects occurred upon challenge and were reversed after withdrawal. The signs are consistent with an idiosyncratic reaction. The occurrence of a contaminant (e.g. heavy metals) as the reason for the recent incidents of hepatoxicity is unlikely.

119. In rare individuals, consumption of turmeric at the levels found in supplements, even at low concentrations (i.e., leading to exposures below the ADI) may pose a risk of adverse effects to the liver, due to an idiosyncratic response. Individuals prone to this response may be genetically susceptible, for example, those carrying the HLA-B*35:01 allele. However, the individual would not know they are susceptible before taking a supplement. This possibility of an unexpected idiosyncratic response should be considered when providing guidance on the use of such supplements.

120. The Committee concluded that substantial exceedances of the ADI represent a potential health risk to humans, especially if other medicines are being taken concomitantly and for individuals with altered hepato-biliary function.

121. Other ‘novel’ supplement types such as micellar, nano, and micro formulations should be assessed in further detail, with regard to their pharmacokinetics and therefore their impact on curcuminoid bioavailability. This is an area of particular concern. This further detail is requested regardless that they only make up a likely small percentage of the supplement market at present,

as they may become more popular in the future.

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