

Annex A-Discussion paper on the potential risk to human health of turmeric and curcumin supplements - following a recent product survey

This is a paper for discussion.

This does not represent the views of the Committee and should not be cited.

Introduction

1. This annex contains information relating to past COT discussions on the safety of curcuminoids and turmeric. There is firstly a link to the most recent draft statement from March 2020. Secondly, there is a collation of relevant past COT minutes from discussions on the topic that took place in September 2019, December 2019 and March 2020.

Second draft statement on the safety of turmeric and curcumin. (TOX/2020/13) (March 2020) Can be accessed [here](#).

Collection of previous minutes relating to COT turmeric safety

Minutes of the meeting held on Tuesday, 17th September 2019 in Broadway House Conference Centre, Tothill St, London, SW1H 9NQ - Item 8: Review of hepatotoxicity of dietary turmeric supplements- TOX/2019/52

2. Turmeric is the common name for the rhizome (underground stem) of *Curcuma longa* L., a herb cultivated in tropical and subtropical regions of the world. For centuries, turmeric has been widely used for imparting colour and

flavour to food, and in Indian and Chinese traditional medicine as a remedy for the treatment of inflammation and other diseases. However, contamination of turmeric may occur either during its cultivation (if grown in lead-rich soil) or downstream processing where xenobiotics or powders of other *Curcuma* species may be introduced.

3. Over the last few years, a number of hepatitis outbreaks related to the consumption of dietary turmeric supplements have been reported. The paper reviewed some of the human case reports, in addition to studies of hepatotoxicity in animals.

4. One member noted that in the subacute study, the dietary turmeric powder the mice were administered may have been contaminated since in the published paper it was stated that these turmeric rhizomes were “purchased locally”.

5. It was noted that the human case studies showed a link to turmeric because the effects occurred upon challenge and were reversed after withdrawal. The symptoms were considered to be an idiosyncratic drug reaction due to underlying susceptibilities in the affected individuals. However, a role for a possible contaminant was not ruled out. It was concluded the animal data were consistent with the human data.

6. The Committee concluded that there was no need to review the current ADI for curcumin that was currently based on reproductive toxicity.

7. The Committee agreed substantial exceedances of the ADI represented a potential health risk to humans, especially if other medicines were being taken concomitantly.

8. Given past reported contamination issues with turmeric supplements, the Committee agreed there would be value in commissioning a chemical analysis of turmeric supplements available on the UK market.

Minutes of the meeting held on Tuesday, 3rd of December 2019 in the Amba Hotel Charing Cross, The Strand, London, WC2N 5HX - Item 11: Draft Statement on the safety of turmeric and curcumin - TOX/2019/74

9. No interests were declared.

10. Turmeric has been widely used for imparting colour and flavour to food, and in Indian and Chinese traditional medicine as a remedy for the treatment of inflammation and other diseases, for centuries.

11. Many of the purported pharmacological properties of turmeric which include antioxidant, analgesic, anti-inflammatory, antiseptic, anticarcinogenic, chemopreventive, chemotherapeutic, antiviral, antibacterial, antifungal and antiplatelet activities, have been attributed to curcumin, a compound naturally present within turmeric rhizomes.

12. Due to its purported health benefits, the consumption of curcumin/turmeric supplements is becoming increasingly popular. However, in recent months there have been a number of reports of hepatotoxicity linked to the consumption of curcumin supplements.

13. The Food Standards Agency has been monitoring incidents related to consumption of raw and powdered turmeric and its supplements. In light of recent reports and due to the uncertainties surrounding the composition and possible contamination of these commodities, the Committee on Toxicity (COT) has been asked to comment on the risk to human health from turmeric and curcumin in their various forms.

14. A discussion paper (TOX/2019/52) was presented to the Committee in September providing information on the data available on the safety of curcumin in supplements and past raw turmeric contamination issues, particularly in relation to lead. The current statement expanded on exposure to raw and powdered turmeric, both in the diet and as used in higher quantities for their purported health benefits.

15. The Committee discussed the first draft of the statement and agreed that, for clarity, the issue of hepatotoxicity from supplement intake should be discussed separately from the issue of contamination of raw/powdered turmeric with heavy metals, and therefore suggested restructuring the statement to reflect this.

16. Regarding supplement intake, the Committee questioned whether there was information available on the individual cases of hepatotoxicity related to intake of turmeric supplements and whether or not the cases could have been due to a localised issue with the supplements available in the Italian market. The Secretariat informed Members that at the time of preparing the statement information on the individual cases reported had not been located however should it become available it would be added to the second draft of the statement. It was noted that the Italian authorities had excluded contamination as a cause of the hepatotoxicity.

17. It was agreed that information on the sales and market share of turmeric/curcumin supplements should be included, to put into perspective the incidents of toxicity reported. Furthermore, Members noted that the increase in the incidents reported could be a reflection of the increase in the trend for consuming these supplements. Overall it was agreed that, based on the case studies presented, the effect is consistent with an idiosyncratic reaction, especially in people with underlying conditions such as latent impairment of biliary function. The Committee requested that the European Medicines Agency's conclusions of their review of curcumin be included in the statement and also for the text to reflect that effects in humans appear to occur at appreciably lower doses on a bodyweight basis than in experimental animals, where hepatocellular changes are observed only at high levels.

18. A number of amendments to the text were suggested and a revised draft statement would be brought to the March 2020 meeting.

Minutes of the meeting of the Committee held on 10th March 2020 at Manchester Conference Centre, Weston Building, Sackville Street, Manchester, Greater Manchester. Item 4: Safety of turmeric and curcumin: Second draft statement TOX/2020/13

19. No interests were declared.

20. Turmeric has been widely used for imparting colour and flavour to food, and in Indian and Chinese traditional medicine as a remedy for the treatment of inflammation and other diseases for centuries.

21. Many of the supposed pharmacological properties of turmeric have been attributed to curcumin, a compound naturally present within turmeric rhizomes. These properties are claimed to include antioxidant, analgesic, anti-inflammatory, antiseptic, anticarcinogenic, chemopreventive, chemotherapeutic, antiviral, antibacterial, antifungal and antiplatelet activities.

22. Due to its purported health benefits, the consumption of curcumin/turmeric supplements is increasingly popular. However, a number of reports of hepatotoxicity linked to the consumption of curcumin supplements have been reported in Italy.

23. The FSA has been monitoring incidents related to consumption of raw and powdered turmeric and its supplements. In light of the reported cases and due to the uncertainties surrounding the composition and possible contamination of

these products, the COT was asked to comment on the risk to human health from turmeric and curcumin in their various forms.

24. The second draft statement addressed the recommendations made by the Committee on the first draft. These mainly related to separating the different issues of potential lead contamination, the effects of natural constituents and composition, particularly where designed to increase bioavailability.

25. Members made further recommendations on the structure and content of the statement including the need for a comment on current dietary exposure.

26. Members questioned the relevance of comparing exposures from supplement intake to the ADI for dietary curcumin. It was decided that it would not be appropriate because synthetic forms or adjuvated curcumin, which may be used in supplements, could have altered toxicokinetic profiles and increased bioavailability thus making the safe levels different from the forms used in food.

27. A number of amendments to the text were suggested by Members and it was agreed that a revised draft statement would be cleared by Chair's action.