COC Ongoing Topics - 2023

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Hydroxyanthracene derivatives

3.1 Following a request from UK-wide Nutrition Labelling Composition and Standards (NLCS) policy group, the UK Food Standards Agency (FSA) commissioned an independent view from the Committee on Mutagenicity (COM) on the mutagenicity of hydroxyanthracene derivates (HADs) based on consideration of the EFSA 2018 opinion on HADs and any additional new data that have become available.

3.2 Overall, the COM agreed that the available evidence indicates that emodin, aloe-emodin, and dantron are genotoxic *in vitro*, but concluded that there is reasonable evidence that there is no genotoxic effect or mechanism *in vivo*. The COM considered that the reported carcinogenic effects of HADs are caused by the high levels of irritation, inflammation, and diarrhoea.

3.3 The topic was then referred to COC in 2022, and in 2023, the Committee discussed a first draft interim position paper, which also included a dietary and dermal exposure assessment. COC considered that there were insufficient data to conclude on an appropriate health-based guidance value for HADs and noted that HADs were a diverse group of compounds that should be assessed on an individual basis. The interim position paper is expected to be published in 2024.

Lung adenocarcinoma promotion by air pollutants

3.4 In July 2023, the COC considered a paper for information on lung cancer promotion by air pollutants (Hill et al (2023). Lung adenocarcinoma promotion by air pollutants. Nature 616 (7955): 159-167).

3.5 The paper had also been discussed by the Committee on the Medical Effects of Air Pollutants (COMEAP) at its meeting on 10th July 2023, subsequent to a presentation from Professor Swanton at the November 2022 COMEAP meeting. COMEAP had noted a number of aspects where input from COC would be helpful,

namely: COMEAP had queried whether mechanisms by which air pollution promoted cancers characterised by the EGFR mutation would also lead to promotion of other cancers initiated by mutations in other genes; the study did not rule out the possibility that air pollutants, e.g. PAHs, might also have an initiating role in addition to the mechanisms demonstrated in the paper; and in view of a continuing possibility of a cancer initiation role, COMEAP was unlikely to revise recommendations with respect to cessation lag used in mortality impact assessments, which assume that some of the benefits of air pollution reductions might not be realised until up to 20 years later.

3.6 The Committee noted that the study was a thorough piece of work covering many different aspects associated with carcinogenicity, in particular the cancer promotion and non-genotoxic mechanisms associated with cancer. It was noted that a number of papers are available from the 1970’s and 1980’s indicating cancer promotion as a mechanism, i.e. it is not just direct genotoxicity that causes cancer. COC appreciated the thoroughness of this highly detailed exploration of cancer in the context of air pollution.

3.7 It was noted that there was unlikely to be a complete absence of mutation occurring as a result of exposure to air pollution, and there are a number of papers on mutations associated with particulate matter. Additionally, the particulate matter used in the study was low in PAHs content. It was noted that this might reduce the potential for genotoxicity. The COC agreed it would be useful to have a COM consideration of the topic. This is expected to be taken forward in 2024.