Session III Roundtable Summary

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How does the microbiome impact on the ingredients we consume?

- The potential exists that a change in the microbiome can have negative effects on drug metabolism and therefore affect the bioavailability of drugs. This raised an interesting point from the reverse perspective on how we protect the microbiome to be responsive to xenobiotics and not impact their mode of action for treating problems elsewhere in the body.

What are the human health outcomes of concern that are related to gut microbiome-mediated change, and what do we know about the relative sensitivity of risk assessment of other toxicological endpoints in response to these effects?

- Patients that are potentially suffering from liver or kidney disease could have increases in sensitivity to changes in the microbiome, producing higher concentrations of different molecules that could exacerbate disease.
- An example was given of ketones being produced by bacteria and the high susceptibility of those with kidney disease.
- The issue of mental health-related effects associated with microbiome changes is an area that needs to be prioritised further.
- How to define adverse effects of changes in the microbiome, or measure impact, is not going to be easily defined.
- Humans have access to dietary protective factors, e.g. anti-inflammatory and high antioxidant diets, but consumers are also exposed to unhealthy, poor diets.
- In terms of risk assessment, to account for the possibility of microbiome variation and microbiome-mediated toxicity, consideration could be given to covering this by the application of an additional uncertainty factor.
- The effects of the microbiome on toxicokinetics, including enterohepatic recirculation and metabolism of xenobiotics into toxic metabolites were noted.

Main themes

- Accounting for microbiome variation and microbiome-mediated toxicity could be achieved by an additional uncertainty factor.
- Effects of the microbiome on toxicokinetics, including metabolism of xenobiotics into toxic metabolites should be considered.