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Health risk assessment of chemical mixtures

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When evaluating the health risk of chemical exposures, classical risk assessment methods only look at one chemical at a time. But humans are exposed to numerous chemicals from many sources, and methods to perform a cumulative risk assessment of mixed exposure to chemicals are needed.

At DTU Food we have established methods to integrate the knowledge on several chemicals that humans may be exposed to at the same time. Our research has focused on animal and cell-based studies on chemicals with endocrine disrupting properties, i.e. altering the levels or function of hormones and thereby resulting in adverse effects on the male and female reproductive system. We have found that chemicals acting via the same modes of action can have cumulative effects in vivo. Interestingly, also chemicals with different modes of action may have cumulative effects in vivo, if they cause the same type of effects in the organism. Overall, our data indicate that cumulative risk assessment of chemicals is needed as assessment of one chemical at a time may underestimate the risk.

This poster presents examples of our research and discusses the following topics:

- How do we predict the combined risk of exposure to several chemicals at the same time?
- Can we group the chemicals according to their type of effects? Or is it necessary to know their exact mechanisms of action?
- Should health risk assessment of food take chemical exposure from other sources into account?
- Should health risk assessment of chemicals in products or environmental take chemical exposure from food into account?