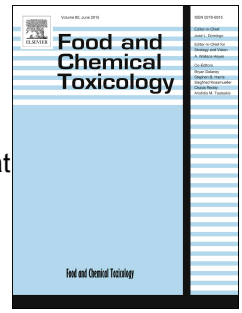
Accepted Manuscript



Exposure assessment for dioxin-like PCBs intake from organic and conventional meat integrating cooking and digestion effects

Jessica Tressou, Nadia Ben Abdallah, Christelle Planche, Gaud Dervilly-Pinel, Pierre Sans, Erwan Engel, Isabelle Albert

PII: S0278-6915(17)30630-0

DOI: 10.1016/j.fct.2017.10.032

Reference: FCT 9357

To appear in: *Food and Chemical Toxicology*

Received Date: 30 June 2017

Revised Date: 17 October 2017

Accepted Date: 19 October 2017

Please cite this article as: Tressou, J., Ben Abdallah, N., Planche, C., Dervilly-Pinel, G., Sans, P., Engel, E., Albert, I., Exposure assessment for dioxin-like PCBs intake from organic and conventional meat integrating cooking and digestion effects, *Food and Chemical Toxicology* (2017), doi: 10.1016/j.fct.2017.10.032.

Exposure assessment for dioxin-like PCBs intake from organic and conventional meat integrating cooking and digestion effects.

Jessica Tressou[1]*, Nadia Ben Abdallah[1], Christelle Planche[2], Gaud Dervilly-Pinel[3], Pierre Sans[4], Erwan Engel[2], Isabelle Albert[1]

[1] INRA – AgroParisTech – Université Paris Saclay, UMR MIA Paris 518, Paris, France

[2] INRA QuaPA, Theix, France

[3] LUNAM - Oniris – LABERCA - INRA UMR 1329, Nantes, France

[4] ALISS UR1303, Université de Toulouse, INRA, ENVT, Toulouse, France

*Corresponding author: Jessica.tressou@agroparistech.fr

Abstract: (199 words)

In this paper, exposure to Polychlorinated biphenyls (PCBs) related to bovine meat consumption is assessed based on multiples sources of data, namely data collected within the national research project "SoMeat" that objectively assesses the potential risks and benefits of organic and conventional food production systems in terms of contaminants respective contents. The work focuses on dioxin like PCBs in bovine meat in France. A modular Bayesian approach is proposed including measures after production, effect of cooking, levels and frequency of consumption and effect of digestion. In each module, a model is built and prior information can be integrated through previously acquired data commonly used in food risk assessment or vague priors. The output of the global model is the exposure including both production modes (organic and conventional) for three different cooking intensities (rare, medium, and well-done), before digestion and after digestion. The main results show that organic meat is more contaminated than conventional meat in mean after production stage and after cooking although cooking reduces the contamination level. This work is a first step of refined risk assessment integrating different steps such as cooking and digestion in the context of chemical risk assessment similarly to current microbiological risk assessments.