



S7. EXPOSURE, INTERNAL DOSE ANALYSIS AND ADVERSE OUTCOMES OF ENVIRONMENTAL POLLUTANTS IN HUMANS

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One of the main obstacles in toxicological risk assessment is predicting the internal dose of the exposed chemicals in humans. Ethical reasons prevent experimental approaches such as obtaining tissue samples from living individuals. Although sampling from some tissues can be done in case of clinical obligations, it is usually impossible for the majority of tissues. The two possibilities are analysing the toxic outcome in unintentionally exposed cohorts in epidemiological studies, and measuring the concentration of the chemical directly in related tissues of cadavers. However, due to the huge variety of chemicals and toxic endpoints, surrogate parameters, so-called biomarkers, are measured in non-invasively provided biological samples. Among others, biomarkers should accurately reflect or correlated either to the toxic outcome, or to the concentration of the chemical of interest in target tissue. Such correlations are frequently sought in animal studies, although surgical tissue incision in humans offers a unique opportunity for such purposes. This lecture intends to document latest findings on exposure assessment and toxic outcomes of environmental pollutants in living systems, with the focus on addressing three major complex issues; (1) correlation between invasive and non-invasive sampling in animals, (2) biomarkers of internal dose, and (3) future perspectives of internal dose prediction in humans.

This study is supported by the Scientific and Technical Research Council of Turkey (TUBITAK) by the project numbers 108Y049 and 114S310, and Ege University EBILTEM project (2011BIL003).