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COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD CONSUMER PRODUCTS AND THE ENVIRONMENT (COT)

TOXICOGENOMICS/PROTEOMICS/METABONOMICS: UPDATE ON LITERATURE RETRIEVED DURING 2003

Gene expression profiling in respiratory tissues from rats exposed to mainstream cigarette smoke

1. Members are asked to comment on the appended paper which reports on gene expression profiles in rat respiratory nasal epithelium and lung tissue from animals exposed to mainstream cigarette smoke (CS) for 3 h or for 3h/day for 5 days/week for 3 weeks. The study design included a 20 hour post exposure recovery period. A custom design cDNA microarray using 513cDNA probes was used. The authors reported up regulation of genes encoding for oxidative stress and phase II drug metabolising enzymes. These effects were most evident respiratory nasal epithelium. After 3 weeks exposure, the magnitude of up-regulation of these particular genes was less than compared to a single exposure. The authors reported that up-regulation of phase 1 metabolising enzymes was similar in RNE and lung and didn't diminish over the 3 week exposure period. Gene expression patterns had returned to almost completely normal after a 20 hour recovery period.
2. An earlier in-vitro study using exposure of Swiss 3T3 cells exposed for 24 hour to aqueous extracts of smoke bubbled phosphate buffered saline reported similar changes in gene expression in that anti-oxidant responses were up-regulated.

Question for COC

3. Members will be aware that primary responsibility to advice on tobacco rests with the Scientific Committee on Tobacco and Health (SCOTH). The particular studies identified in this paper were cited during the general literature search on the development of genomics and use of this technology in toxicology. The primary focus of the review is to reconsider the conclusions reached by the COT/COC/COM on genomics reached in October 2001 and to provide advice on whether any changes to the generic conclusions are required.
4. The secretariat would therefore welcome members comments on these two papers.

**Secretariat February
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