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Presentation Title: **Chlorophyllin differentially modulates *CYP1* gene expression in normal human mammary epithelial cells (NHMECs) exposed to benzopyrenes**

Presentation Start/End Time: Wednesday, Apr 05, 2006, 8:00 AM -12:00 PM

Location: Exhibit Hall, Washington Convention Center

Poster Section: 19

Poster Board Number: 18

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Benzo(a)pyrene (B[a]P), a carcinogen, and benzo(e)pyrene (B[e]P), a co-carcinogen, are ubiquitous environmental pollutants. Here, we examined the induction, and modulation by chlorophyllin (5μM) of *CYP1A1* and *CYP1B1* in NHMEC strains (M98015 and M98025) exposed to either B[a]P or B[e]P (4μM). Four exposure regimens were used: **T1** - B[a]P or B[e]P alone (24h); **T2** - B[a]P or B[e]P together with chlorophyllin (co-treatment, 24h); **T3** - chlorophyllin pretreatment (24h) followed by B[a]P or B[e]P alone (24h); and **T4** - chlorophyllin pretreatment (24h) followed by chlorophyllin plus B[a]P or B[e]P co-treatment (24h). Real-time PCR (TaqMan™) was used to examine differences in *CYP1A1* and *CYP1B1* expression. **T1** - B[a]P induced *CYP1A1* 35-fold in cell strain M98015 and 10-fold in cell strain M98025. B[a]P induced *CYP1B1* 23-fold in cell strain M98015 and 5-fold in cell strain M98025. Levels of *CYP1A1* and *CYP1B1* expression were unchanged in the presence of B[e]P, with the exception of a 2-fold increase in *CYP1A1* in cell strain M98015. **T2** - Co-treatment with chlorophyllin reduced B[a]P induction of *CYP1A1* and *CYP1B1* expression by 30% and 42%, respectively in M98015, and 37% and 21% in M98025. In contrast, chlorophyllin increased B[e]P induction of *CYP1A1* and *CYP1B1* by 148% and 75% respectively in M98015, and by 219%, and 132%, respectively in M98025. **T3** - Pretreatment with chlorophyllin did not alter B[a]P induction of either enzyme in M98015, but in M98025 *CYP1A1* and *CYP1B1* levels were reduced by 29% and 50%, respectively. With chlorophyllin pretreatment B[e]P-induced *CYP1A1* and *CYP1B1* expression levels were mitigated by 3% and 4%, respectively in strain M98015 and 19% and 54%, respectively in strain M98025. **T4** - When NHMECs were co-treated with B[a]P and chlorophyllin after chlorophyllin pretreatment, induction of *CYP1A1* and *CYP1B1* expression fell by 40% and 47% in M98025 and by 0% and 35% in M98015. B[e]P induction of *CYP1A1* and *CYP1B1* was modestly enhanced by T4 treatment in M98015, as was *CYP1A1* expression in M98025. Complementary studies are in progress to define DNA adduct levels. Data for *CYP1A1* and *CYP1B1* expression levels show clear differences between metabolic events occurring in NHMECs exposed to the carcinogenic B[a]P and the non-carcinogenic B[e]P.

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