



EPIDEMIOLOGY

## LONG-TERM EXPOSURE IN POLLUTED ENVIRONMENT EXACERBATE AND ACCELERATE SKIN AGING

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**Introduction:** Literature suggests that pollution contributes to extrinsic clinical aging signs. Currently no clinical study has correlated individual exposure to clinical sign appearance. Current technics such as biomonitoring permit measurement of individuals acute (24h-48h in blood/urine) or chronic (<1 year in hair fiber) pollutant exposure and could be a solution to link pollution and skin aging.

**Objective:** determine the impact of long term pollution exposure on skin imperfections and skin aging-related signs and analyze skin microbiome in correlation to individual pollutant contamination in a clinical study.

**Material and method:** Two Chinese women populations living for more than 10 years in cities, reported either with high (Baoding) or with low (Dalian) pollution level were compared. Skin imperfection (greasier skin, acne), aging-related clinical signs (wrinkles) and pigmentation disorders were measured. Biomonitoring was performed on hair fibers (12cm=1 year) from each subject to measure individual exposure to Polycyclic Aromatic Hydrocarbons.

**Results:** We showed that people living in Baoding present significantly more skin disorders: i) skin imperfections with higher acne prevalence and pore disorders; ii) higher severity of wrinkles; iii) pigmentation disorders. Individual pollutant quantification in hair fibers confirmed that the majority of women living in Baoding had higher PAH level than women living in Dalian. Overall study showed a strong correlation between PAH contamination and some clinical aging signs.

**Conclusion:** This is the first clinical study proving that chronic exposure to pollution contributes to appearance of clinical aging signs and that severity of skin damage is strongly correlated to the level of PAH contamination. Next steps will be to study the





combined effects of UV and PAH on the appearance of skin disorder, as a recent publication has shown that some pollutants are phototoxic at low concentrations.

