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Environmental Biomarkers Analysis

Laboratory of Industrial and Enviromental Toxicology ULCO - Dunkerque / ILIS - Lille II

CONTEXT

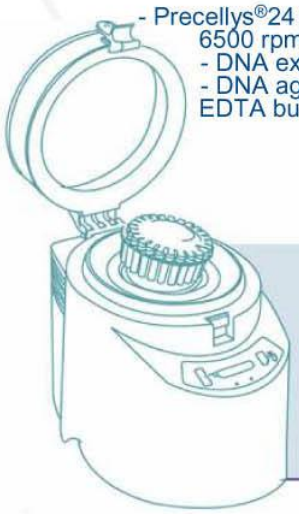
Mosses are environmental biomarkers used for the long term accumulation and bioaccumulation assessment of atmospheric particles. Organic and inorganic pollutants could be responsible for oxidative stress and biological modifications. The biomarkers are here the MDA concentration by HPLC (MalonDiAldehyde resulting from membranes lipoperoxidation), the 8 hydroxy-2-deoxyguanosine concentration by ELISA (DNA adducts) and the DNA fragmentation (DNA ladder, results shown)

MATERIAL

- Precellys®24
- Precellys® kit MK28 (metal beads)
- Sample : 50 mg of frozen mosses exposed in situ to air pollution
- Buffer : 250 µl of PBS (added after grinding)

PROTOCOL

- Precellys®24 parameters:
  6500 rpm, 1x30sec.
  - DNA extraction
  - DNA agarose gel (1%) in Tris/ Borate/ EDTA buffer



RESULTS

In situ exposures proceed on 2 sites: a site mainly contaminated by industrial emissions (Dunkerque, North of France) and rural site (Montagney, East of France).

During exposures, sampling is carried out every 8 weeks delimiting 3 period exposure :
T1, T2, T3 and T0 corresponding to non-exposed mosses.

The “smear” observed indicated the DNA fragmentation. The DNA ladder test seems to reveal DNA fragmentation for samples exposed in industrial site for 16 and 24 months.

Dunkerque

Montagney

CONCLUSION

Only a high contamination could induce the degradation on DNA in *Scleropodium purum*. The Precellys® 24 and Precellys® kit MK28 allows the grinding of mosses, which are a resistant material to the manual grinding.

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For more details, please contact precellys@bertin.fr or visit our website

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