Exploring the Role of Endocrine-Disrupting Chemicals (EDCs) in Frontal Fibrosing Alopecia (FFA): A Preliminary Study

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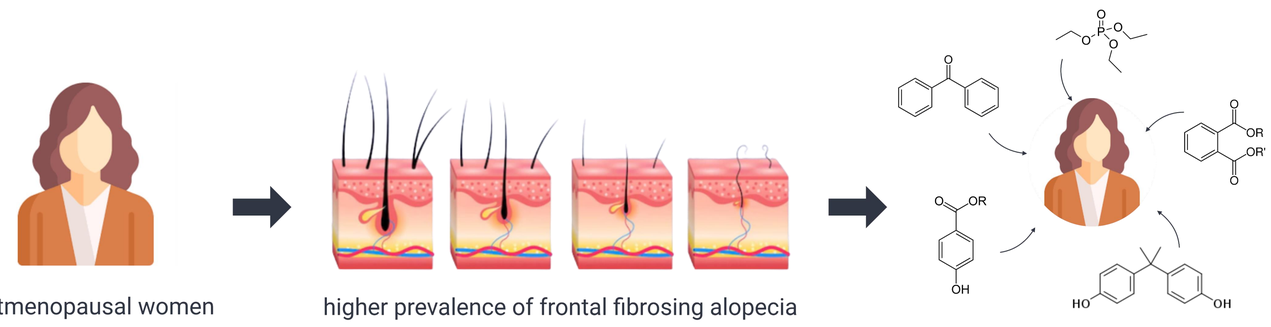
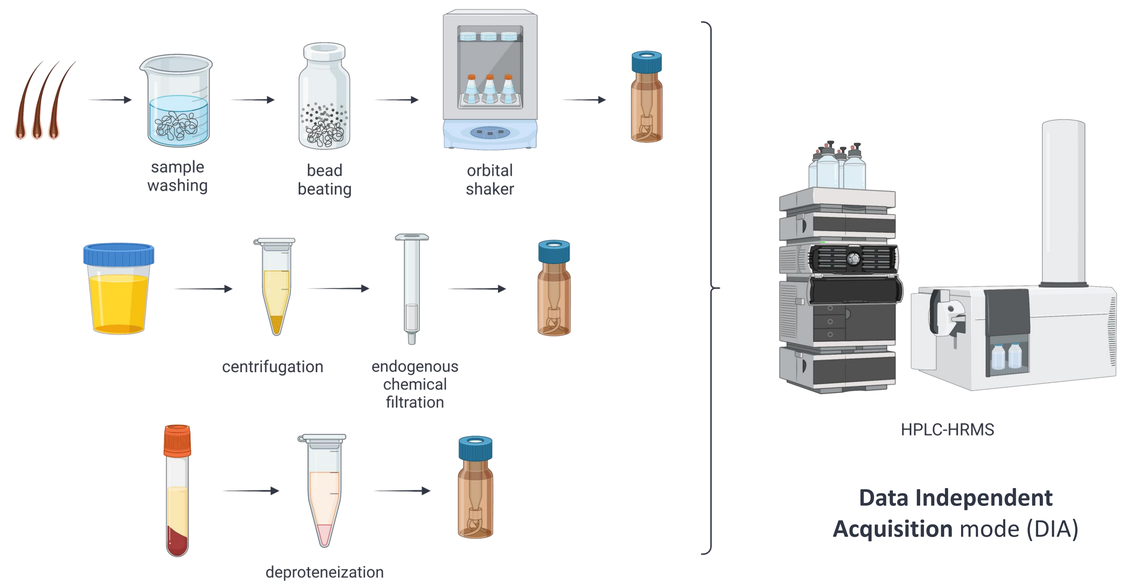
1 INTRODUCTION



- **Frontal fibrosing alopecia** (FFA) is a leading cause of scarring alopecia, affecting mainly **postmenopausal women**.
- Its exact cause is unknown, but **hormonal** and **genetic factors** may play a role.
- **Environmental factors**, such as exposure to **endocrine-disrupting chemicals** (EDCs), are suspected to be involved.

- This **proof-of-concept** study aims to investigate the **connection between EDC exposure and FFA development**.
- The study involves **10 FFA patients** and **10 age-matched controls**, with **blood**, **urine**, and **hair** samples collected and analyzed as part of the research.

2 METHODS

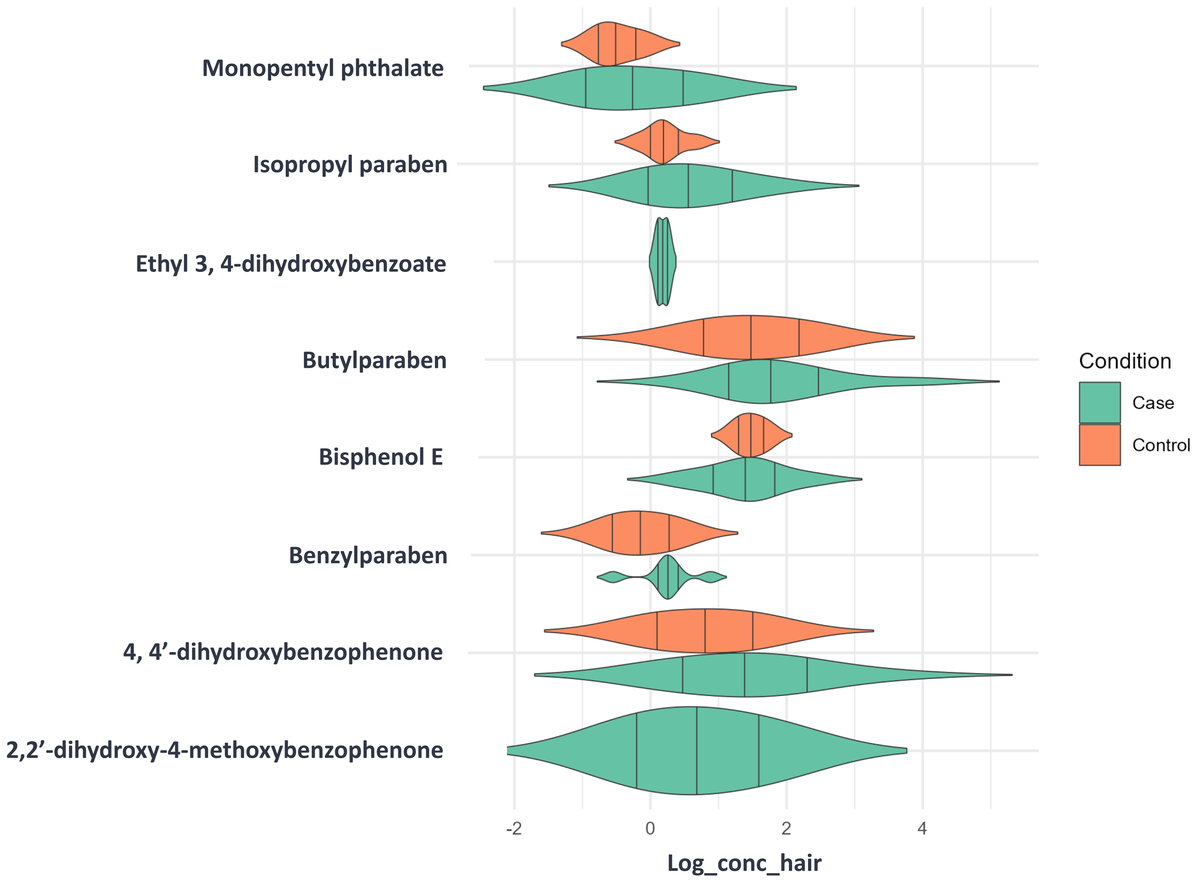


- Methods adapted from Gil-Solsona *et al.* and Hardy *et al.* [1, 2]
- **Procedural blanks** were prepared to assess contamination during the extraction process (n = 5 per matrix)
- **Target** analysis → **48 compounds** (EDCs)
  - Flame retardants
  - Industrial chemicals
  - Natural products and metabolites
  - Plasticizers and transformation products
  - Preservatives
  - UV filters
  - Other Personal Care Products (PCPs)

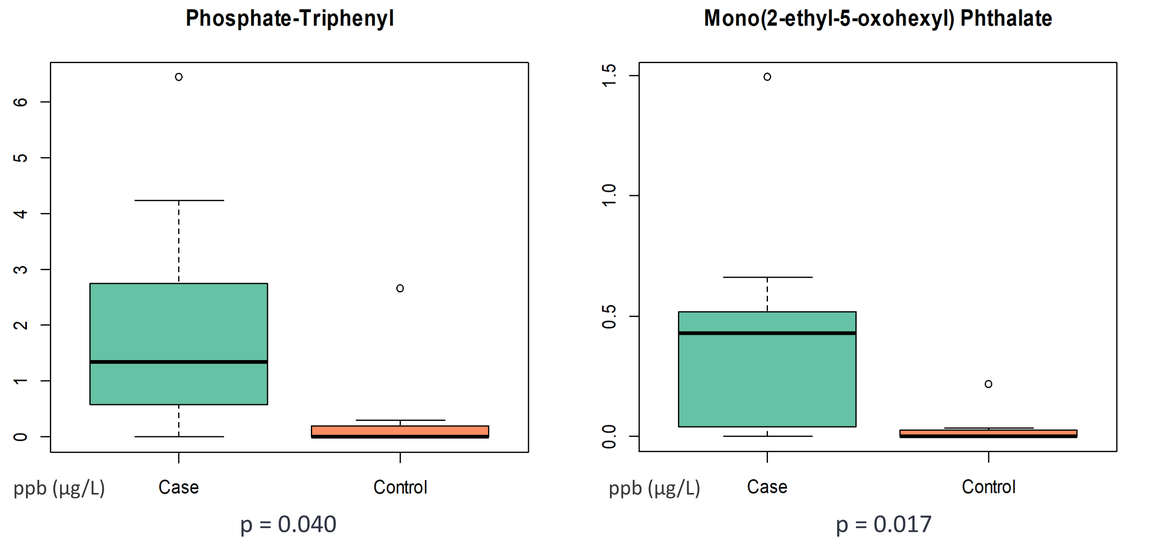
3 RESULTS

35 compounds detected → level 1 confirmation [3]
- 30 compounds (63%) in hair
- 20 compounds (42%) in urine
- 13 compounds (27%) in serum

Violin plot of selected compounds in hair samples



Compounds with statistically significant differences in urine samples



4 CONCLUSIONS

- **Different concentration** levels were observed **in each matrix**, which highlights the importance of collecting diverse data and the limitations of our understanding of the **chemical exposome**.
- **Statistically significant differences** ($p < 0.05$) were observed for **mono(2-ethyl-5-oxohexyl) phthalate** and **triphenyl phosphate** in urine samples.
- A noticeable trend towards **higher concentrations** in **cases vs. controls** was observed in **hair and urine** matrices, but **not in the serum samples**. However, further research is needed due to the small sample size.
- **Hair** shows the **highest concentrations**, consistent with prior literature, being the matrix that collects more information on **long-term exposure**.

REFERENCES

[1] R. Gil-Solsona et al., "The Potential of Sewage Sludge to Predict and Evaluate the Human Chemical Exposome," Environ. Sci. Technol. Lett., vol. 8, no. 12, pp. 1077–1084, Dec. 2021
[2] E. M. Hardy, R. C. Duca, G. Salquebre, and B. M. R. Appenzeller, "Multi-residue analysis of organic pollutants in hair and urine for matrices comparison," Forensic Sci. Int., vol. 249, pp. 6–19, 2015
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