

MONITORING OF ETHYLENE OXIDE CONTAMINATION IN HERBAL DIETARY SUPPLEMENTS

PRAĆENJE ONEČIŠĆENJA ETILEN-OKSIDOM U BILJNIM DODACIMA PREHRANI

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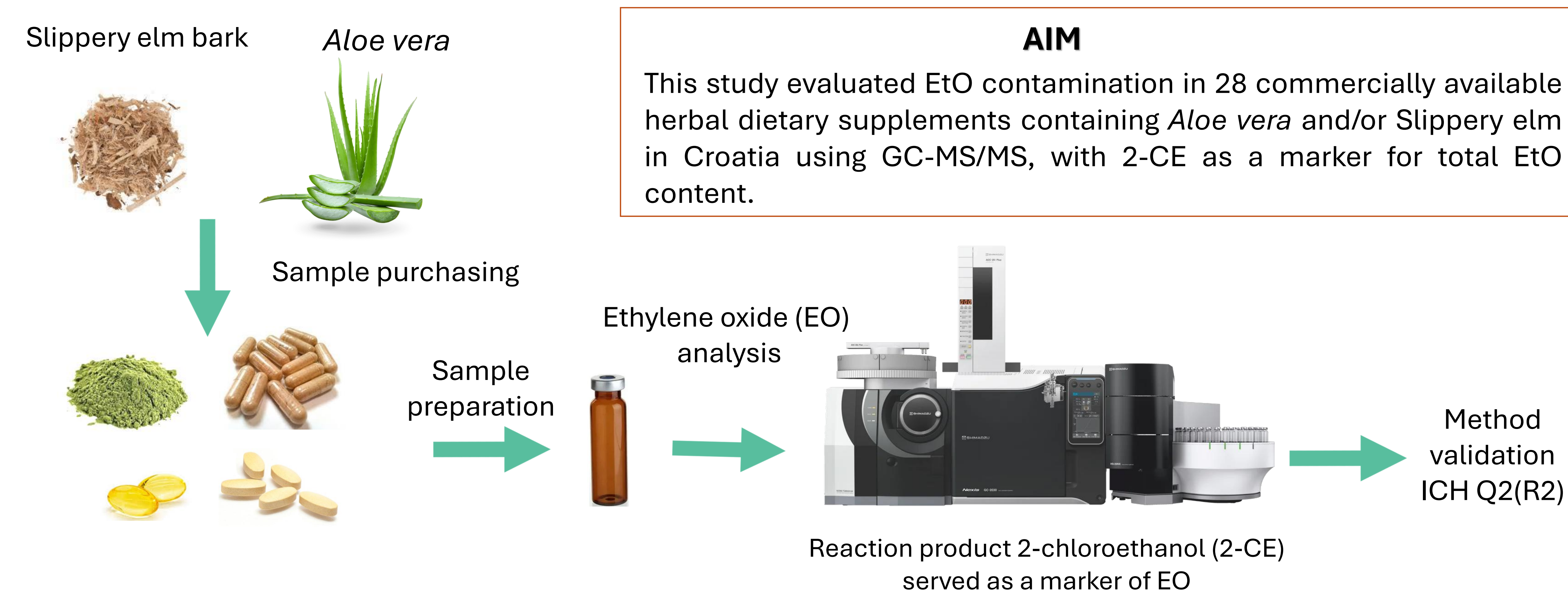
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INTRODUCTION

Herbal dietary supplements are widely used for gastrointestinal disorders, including inflammatory bowel disease, but microbial decontamination may introduce ethylene oxide (EtO), a toxic and highly reactive contaminant¹. Residual EtO and its reaction product 2-chloroethanol (2-CE) may pose a potential health risk.



RESULTS AND DISCUSSION

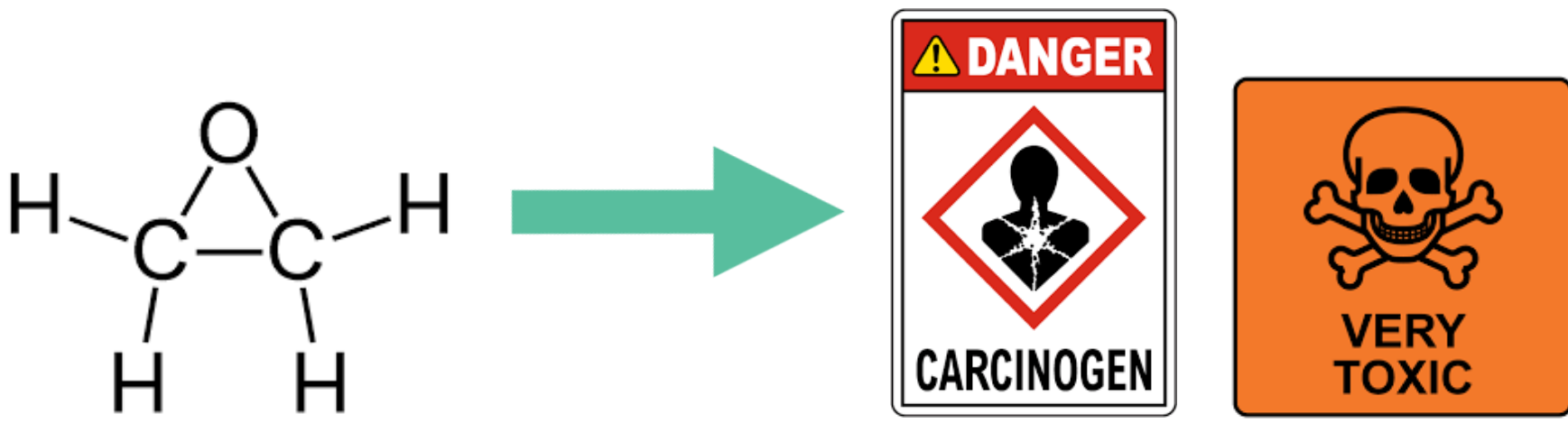
The results are presented in **Table 1**. EO total was quantified in 53.6% of the analysed dietary supplements, whereas concentrations in the remaining products were below the limit of quantification (<0.02 mg/kg). All soft-shell capsule and powder formulations contained EO total below the limit of quantification. Overall, 92.9% of the analysed dietary supplements complied with the applicable EU limit. Two multi-herbal products containing *Aloe vera* exceeded the regulatory limit. The tablet formulation S26 contained 0.28 mg/kg EO total (2.8-fold above the limit), whereas the hard capsule formulation S14 contained 7.24 mg/kg (72.4-fold above the limit).

Table 1. Ethylene Oxide Content and EU Compliance in Dietary Supplement Samples.

Ethylene oxide				
Dosage form	Number of quantified samples	Total ethylene oxide (mg/kg)	Mean (mg/kg)	EU criteria (<0.1 mg/kg)
hard capsule	13 (59% of all hard capsule samples)	0.02-7.24	1.02	12 passed, 1 failed
tablet	2 (100 % of all tablet samples)	0.03-0.28	0.16	1 passed, 1 failed

CONCLUSION

These findings emphasize the need for continuous monitoring of EtO residues in herbal dietary supplements to ensure consumer safety and regulatory compliance.



REFERENCES

[1] D. Amidžić Klarić, J. Kovačić, M.-L. Jeličić, S. Zubčić, V. Stankov, M. Gulan Čičak, B. Bučar, I. Klarić, A. Mornar, *Pharmaceuticals* 16 (2023) 893