Uncovering the Chemical Signature of Neuchâtel Absinthe Artemisia absinthium L.

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Artemisia absinthium is a key plant used in the traditional liquor “absinthe,” closely associated with Swiss culture and heritage. However, this species is not native to Switzerland, raising important questions about the respective contributions of genetic and environmental factors to the liquor’s chemical composition and distinctive taste. To address this, we translocated eight wild populations, originating from elevations between 450 and 2000 meters, into the Neuchâtel Botanical Garden. From both the wild populations and their cultivated counterparts, we sampled leaves, roots, flowers, and stems, and analyzed their metabolomic profiles. The results revealed that plant organs exhibit highly distinct chemical signatures, reflecting strong organ-specific differentiation. Furthermore, cultivated individuals displayed tightly clustered metabolomic profiles, clearly separated from their wild relatives. This convergence suggests that cultivation in the botanical garden environment reduces natural variability and shapes specific chemical phenotypes.