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Study on the chemical profile of essential oils extracted from thirteen lavender cultivars grown under experimental conditions in the area of Mănăștur, Romania

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Figure 1. Lavender plantation at Mănăștur, Arad County.



Figure 2. Copper still used for essential oil extraction.

Abstract: GC-MS analysis compared essential oils from dried flowers of 13 lavender cultivars harvested in 2022 at Mănăștur, Arad County. Linalool ranged from 20.13% to 44.74%. Imperial Gem had the highest linalyl acetate proportion (45.95%), while Silver Mist had the highest camphor proportion (18.09%). The profiles provide preliminary evidence of compositional diversity under local growing conditions.

Introduction

- Lavender essential oils vary in the relative proportions of their constituents. Characterizing individual cultivars under local conditions supports comparison of their chemical profiles.
- Objective: to characterize and descriptively compare oils obtained from dried flowers of thirteen cultivars grown at Mănăștur.

Materials and method

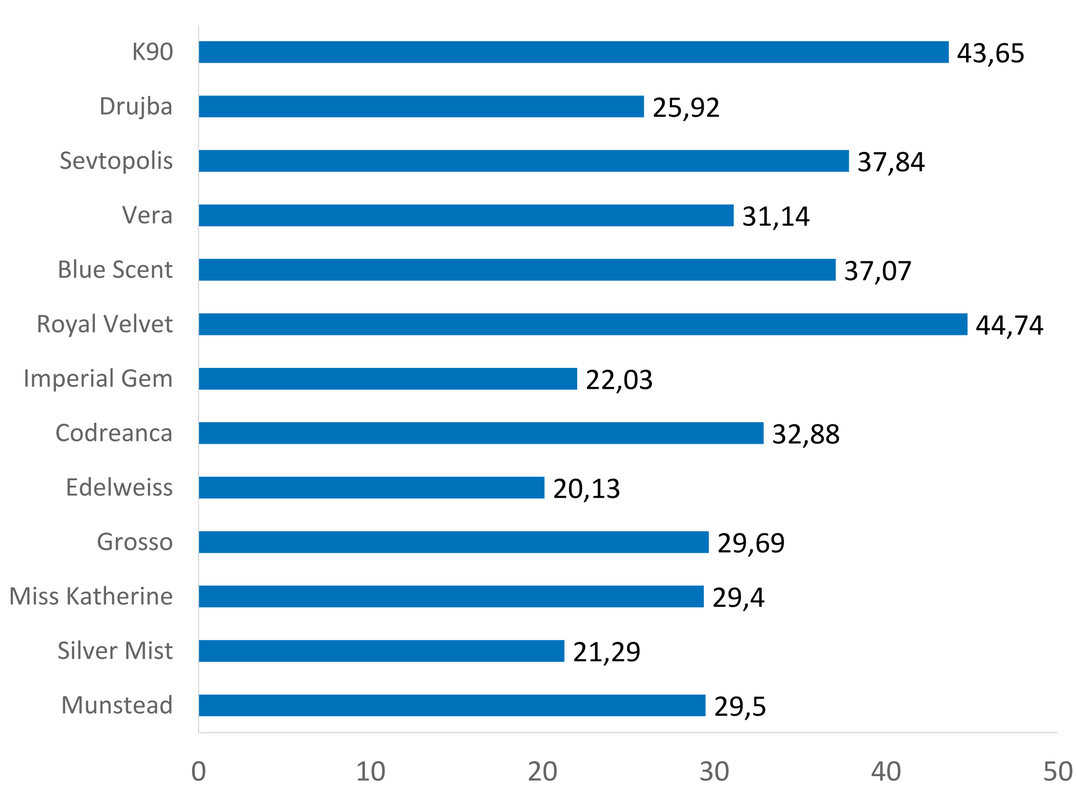
- Plant material: 2022 harvest, flowers dried for 45 days.
- Extraction: copper still, 80 L capacity, 40 L water, approximately 4 h per distillation. We pooled oils from repeated distillations into one composite sample per cultivar.
- GC-MS: Shimadzu GCMS-QP2010 Plus, AT-5MS column (30 m × 0.32 mm × 0.25 µm). Sample: 20 µL oil in 1480 µL hexane. Injection: 1 µL. Helium: 1.92 mL/min. Identification: NIST library.
- Data: mean relative peak areas from three injections per composite sample. Descriptive comparison without significance tests.

Conclusions

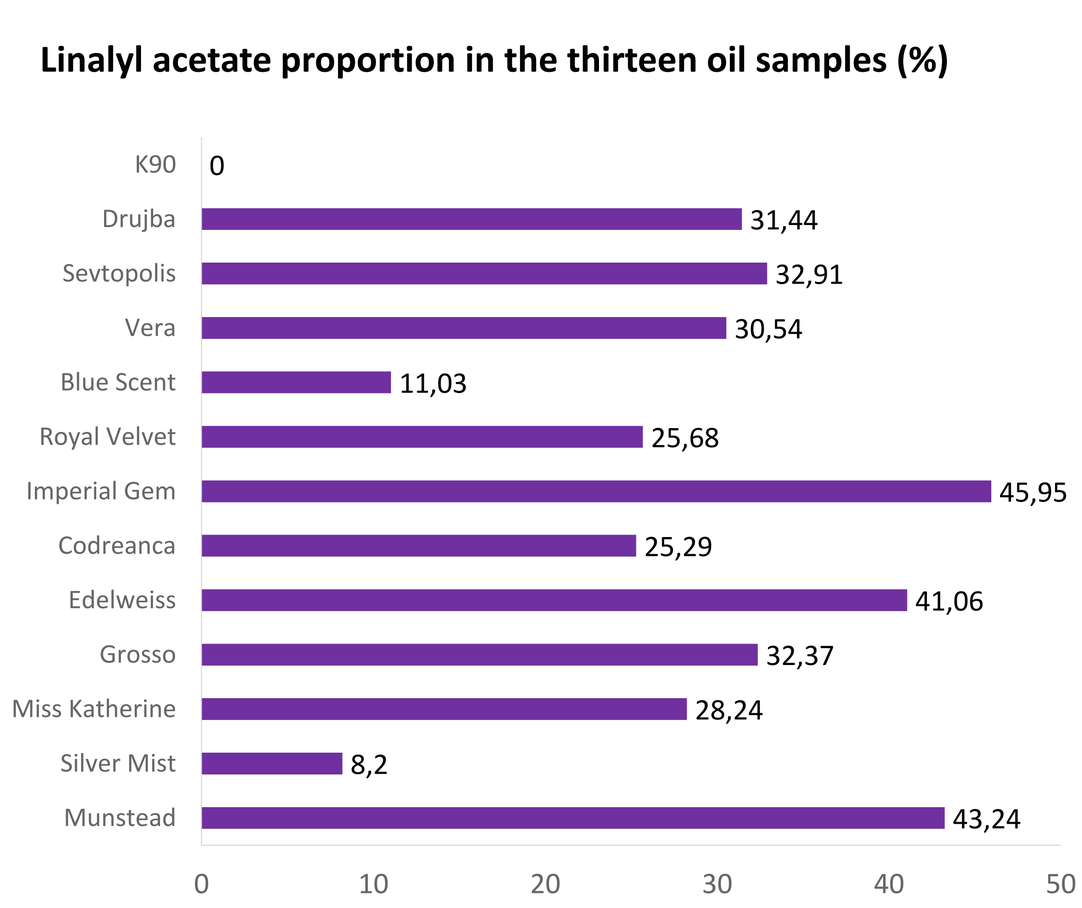
- The analyzed oil samples showed distinct chemical profiles. „Royal Velvet” and „K90” had the highest linalool proportions, while „Imperial Gem” and „Munstead” had the highest linalyl acetate proportions.
- To classify lavender essential oil into a specific quality category, compositional diversity is significant, and the proportions of other constituents are important for establishing the genotypic profile.

Results and discussions

Linalool proportion in the thirteen oil samples (%)



Linalyl acetate proportion in the thirteen oil samples (%)



K90: linalyl acetate not reported.