

Locally Cultivated *Thymus vulgaris* L. as a Sustainable Source of Bioactive Compounds for Topical Applications

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Abstract: The study evaluated a 70% ethanolic extract obtained from locally cultivated *Thymus vulgaris* L. from the Banat region, Romania. The extract showed relevant phenolic content, notable antioxidant activity, and a favorable biocompatibility profile on the CAM model, supporting its potential use in topical applications.

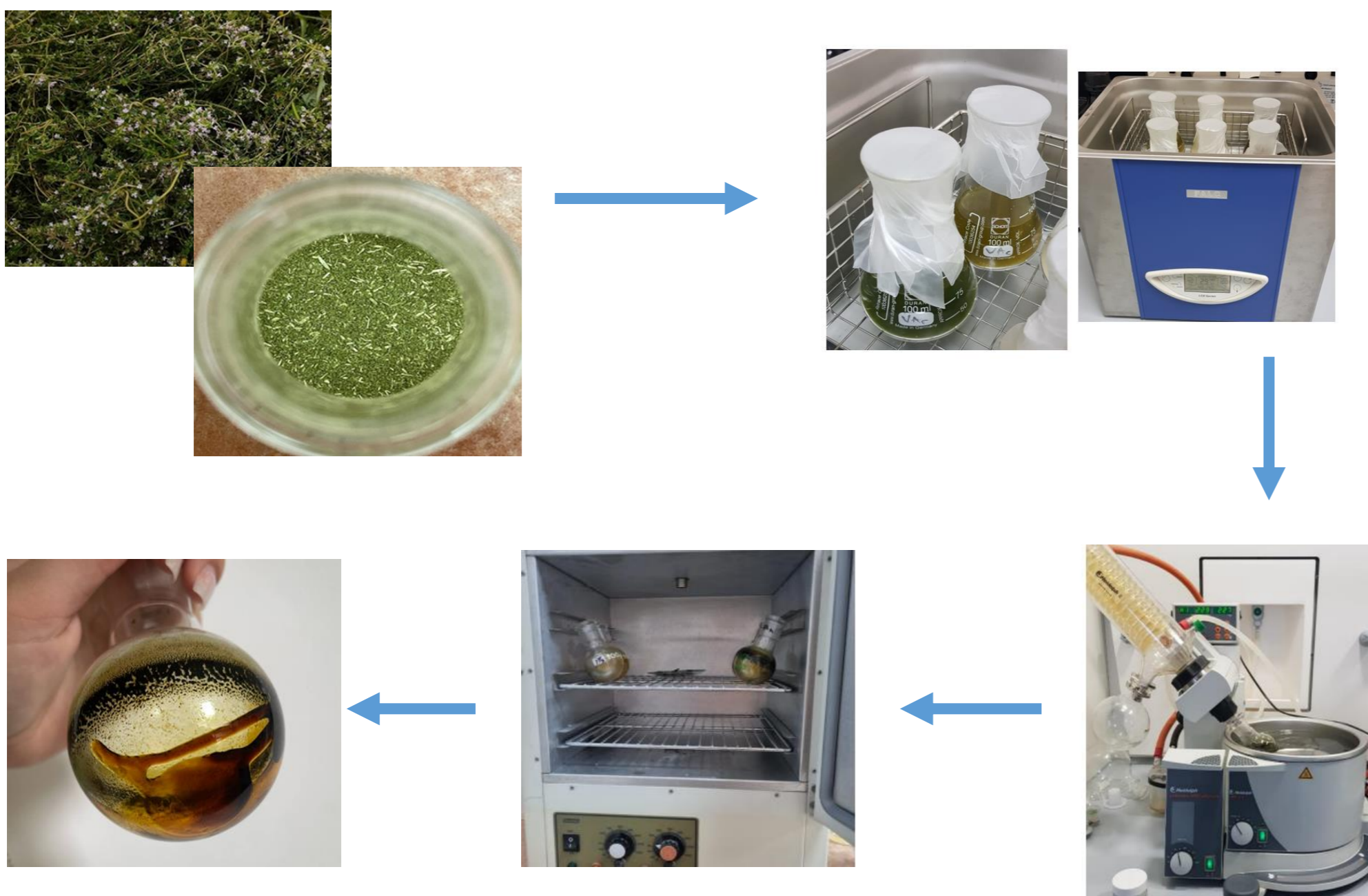
• Introduction

- aromatic medicinal plant from *Lamiaceae* family
- widely used in traditional medicine
- High content in essential oils, phenolic acids, flavonoids, triterpenes
- promising natural source for topical and cosmetic formulations

• Material and method

Sample: TVH - aerial parts (*Thymi herba*), harvested from a local culture in Liebling, Timis

Extraction: 70% ethanolic extracts drying → pulverization → umectation → ultrasonication → filtration → concentration → drying → refrigeration



Folin-Ciocalteu method: total polyphenolic content → mg GAE/g dried extract

DPPH assay: antioxidant capacity, using ascorbic acid as a control

HET-CAM test: *in vivo* assay using chicken chorioallantoic membrane (CAM) → evaluation of the irritative potential.

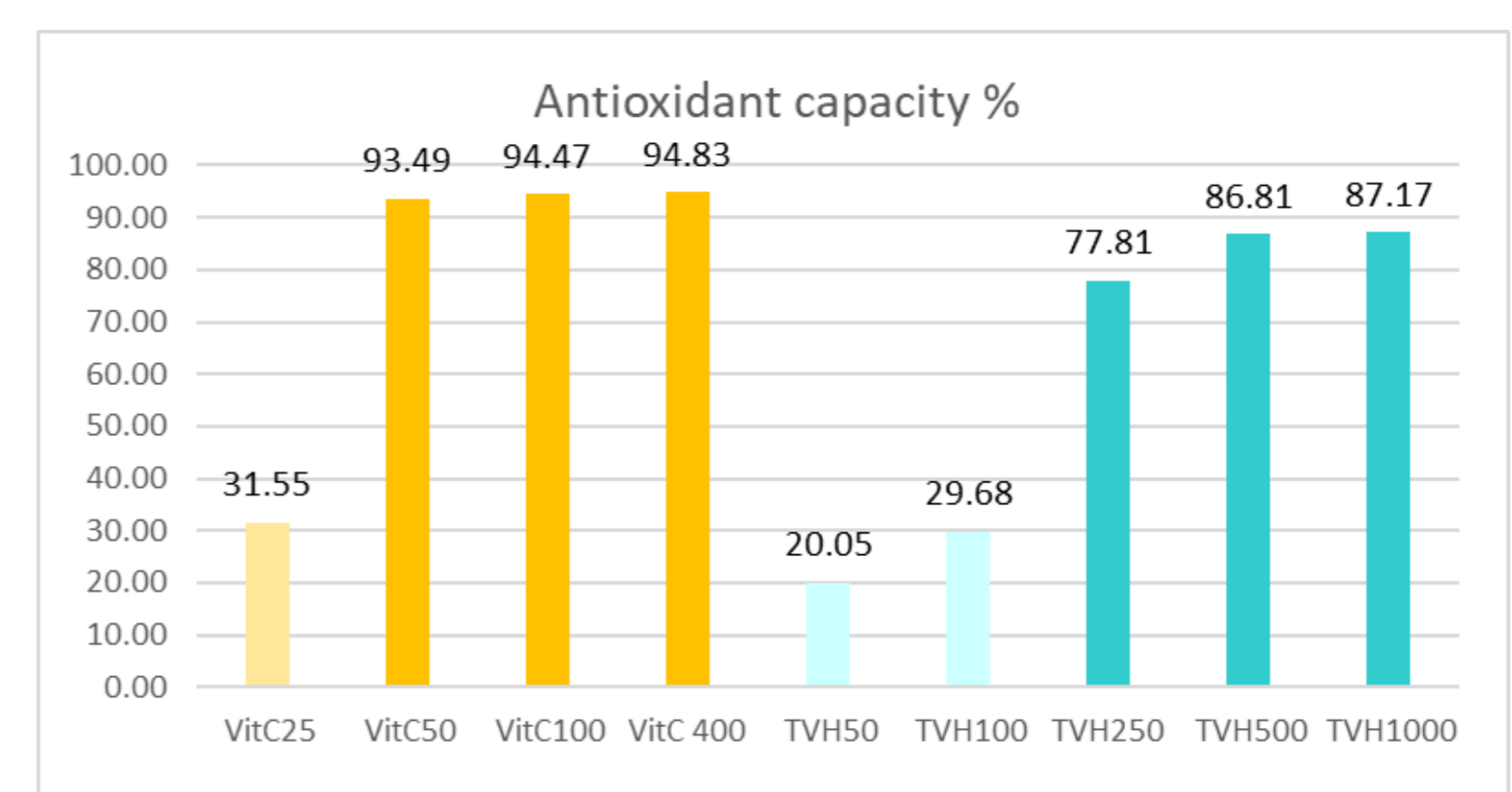


• Results and discussions

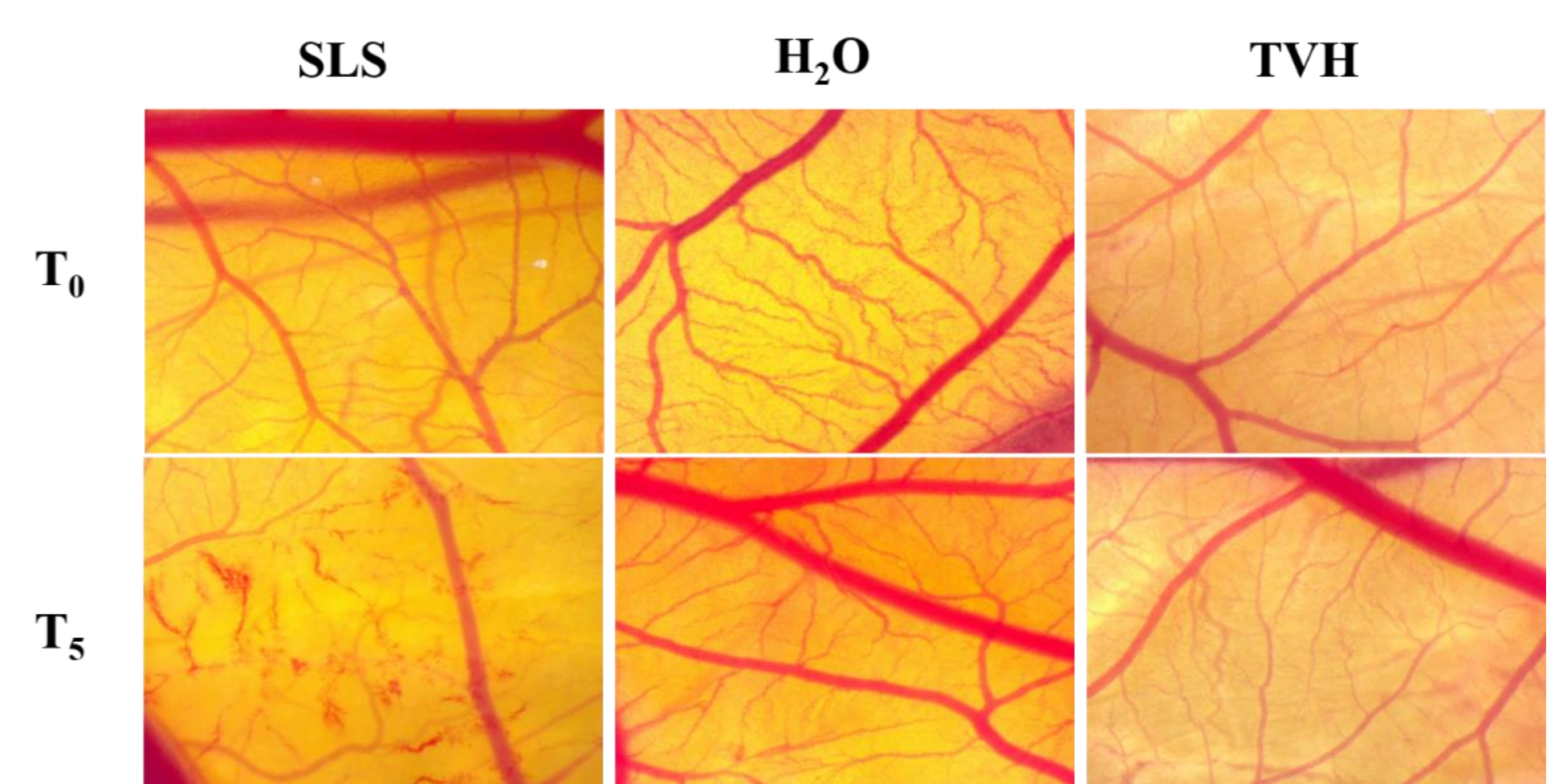
Folin Ciocâlțeu method

Sample	Abs 750 nm	mg GAE/g dry extract
TVH	0.584	79.38

DPPH assay



HET-CAM assay



• Conclusions

The ethanolic extract obtained from locally cultivated *Thymus vulgaris* L. showed relevant phytochemical and biological potential. The presence of phenolic compounds was associated with **strong antioxidant activity**, especially at medium and high tested concentrations. The HET-CAM assay confirmed a **good biocompatibility** of the extract and the absence of irritative effects on vascularized membranes. These results support the potential use of thyme as a **sustainable source of bioactive compounds for external applications**.