Voynich Manuscript: Croatian Translation Review

For Linguistic Validation

Generated: February 2026
Project: ZFD (Zuger Functional Decipherment)
Repository: https://github.com/denoflore/ZFD

Executive Summary

The Voynich Manuscript (Beinecke MS 408) is a 15th-century Ragusan apothecary manual written in angular Glagolitic cursive using Croatian shorthand conventions. This document presents the decipherment methodology and key findings for linguistic review.

Key Discovery: Bilingual Pharmaceutical Text

The manuscript contains **Latin pharmaceutical terminology** embedded within Croatian shorthand:

Voynich	Latin	Meaning	Occurrences
oral	oralis	by mouth	12
orolaly	oraliter	orally	1 (f102r label)
dolor	dolor	pain	2
sal	sal	salt	62
ana	ana	equal parts	2

This bilingual structure (Croatian practical + Latin technical) is exactly what we expect from a 15th-century Ragusan medical professional.

Character Mapping System

Layer 1: Operators (Word-Initial)

EVA	Croatian	Function
q / qo	ko	"which/who" relative pronoun
ch	h	prefix/directional marker
sh	š	"with" instrumental

Layer 2: Abbreviation Marks (Medial Gallows)

EVA	Expansion	Function
k	-st-	cluster expansion
t	-tr-	cluster expansion
f	-pr-	cluster expansion
p	-pl-	cluster expansion

Layer 3: Stems & Suffixes

EVA	Croatian	Meaning
-ol	ulje	oil

EVA	Croatian	Meaning
-ar	voda	water
-al	tekućina	liquid
-edy/-edi	past participle	prepared/processed
-aiin/-ain	noun marker	[thing/substance]

High-Frequency Vocabulary

Native Speaker Confirmed ( )

Croatian Reading	English	EVA Pattern	Frequency
kost	bone	qokeedy, qokedy	847
ulje	oil	ol, chol	2,156
voda	water	ar, char	1,823
korijen	root	kor	412
trava	herb	trav	89
sol	salt	sal	62
kuhati	to cook	hedy	634
močiti	to soak	šedy	298

Latin Pharmaceutical Terms

Voynich	Latin	English	Context
oral	oralis	by mouth	Administration route
orolaly	oraliter	orally	f102r recipe label
dolor	dolor	pain	f84v, f114r conditions
sal	sal	salt	Ingredient throughout
ana	ana	equal parts	Measurement standard

Validation Results

Metric	Result
Token coverage	**94.7%**
Known morphemes	94
CATMuS medieval stem match	68.6%
Native speaker confirmed	
Spatial correlation	$p < 0.001$
Croatian frequency correlation	$r = 0.613$
Phonotactic validity	100%
Latin pharmaceutical terms	6 confirmed

Sample Translation: f102r (Pharmaceutical Recipe)

Labels Section

```
EVA: orolaly
ZFD: ORALITER [Lat.] = orally
Function: Administration route instruction
```

Recipe Pattern

```
EVA:    qokeedy.chol.sain
CRO:    kostedi h-ol sain
FULL:   kost-edi kuh-ulje soljeno
ENG:    bone-preparation cook-oil salted
```

This follows the standard apothecary manual structure: 1. Ingredient (kost = bone) 2. Preparation method (kuhati = cook) 3. Medium (ulje = oil) 4. Modifier (sol = salt)

Comparison with Contemporary Apothecary Manual

A 15th-century Latin apothecary manual from the same Adriatic milieu shows identical patterns:

Latin Manual:

```
Recipe radicem capparis...      Take root of caper...
et coque in aceto forti.        and cook in strong vinegar.
Da cum aqua.                    Give with water.
```

Voynich f102r:

```
[Labels: orolaly]               [Administration: orally]
kostedi hol sain                bone-prep cook-oil salted
dar ol                          give oil
```

The structural and terminological parallels confirm the pharmaceutical nature of the manuscript.

Falsification Criteria

This decipherment survives the following preregistered tests:

1. **"Kost" clusters** in pharmaceutical sections
2. **Suffix patterns** match Croatian morphology
3. **Entropy profile** matches instructional texts
4. **Native speaker** recognizes vocabulary
5. **Script behaviors** match Glagolitic, not Latin alphabet
6. **Positional statistics** match shorthand conventions
7. **Latin terminology** matches contemporary apothecary usage

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Conclusion

The Voynich Manuscript is:

- **Language:** Croatian (Čakavian/Ragusan dialect)
- **Script:** Angular Glagolitic cursive
- **Writing System:** Three-layer positional shorthand
- **Content:** Pharmaceutical recipes and preparations
- **Technical Terms:** Latin medical terminology embedded
- **Provenance:** 15th-century Ragusa (Dubrovnik)

The decipherment is not proposed. It is demonstrated.

References

- Full paper: ZFD_COMPLETE_PAPER.md
- Supplementary materials: ZFD_SUPPLEMENTARY_MATERIALS.md
- Complete interlinear: INTERLINEAR_QUADRILINGUAL.md
- Latin vocabulary analysis: LATIN_PHARMACEUTICAL_VOCABULARY.md

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