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Report

for the study

«Study of the *in-vitro* release of oregano essential oil at gastric and intestinal pH from sustained release granules»

A. Introduction

The present report in the framework of the project "*In-vitro* release of oregano essential oil from sustained release granules" managed by ELKE AUTh (code 99819) has as objective the study of the *in-vitro* release of oregano essential oil at simulated gastric fluid (SGF) and simulated intestinal fluid (SIF) pH from sustained release granules.

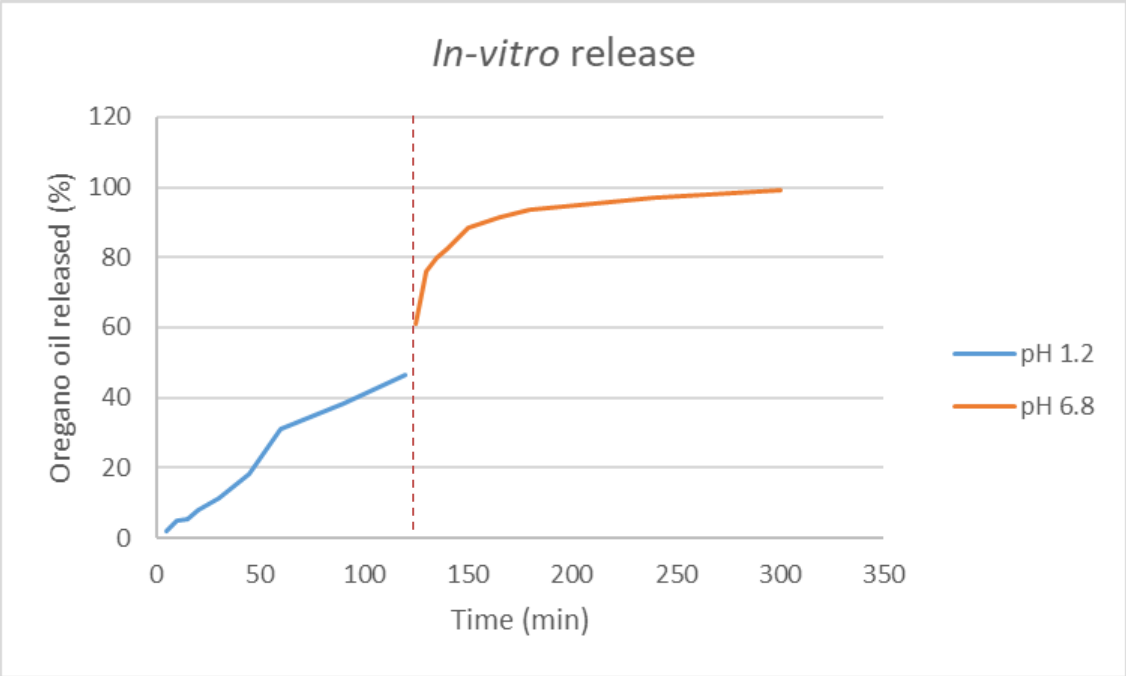
B. Results

B1. *In-vitro* dissolution study

The results from the study of the *in-vitro* release of oregano essential oil at SGF and SIF pH from the sustained release granules are shown in Table 1 and Figure 1.

Table 1. *In-vitro* release of oregano essential oil at stomach and intestinal pH from the sustained release granules.

Time, t (min)	pH	Concentration (mg/mL)	Oregano oil released (mg)	Oregano oil released (%)
5	1.2 (SGF)	0.001	0.28	1.89
10		0.004	0.75	4.99
15		0.004	0.80	5.36
20		0.006	1.16	7.72
30		0.009	1.73	11.56
45		0.014	2.70	18.00
60		0.023	4.67	31.14
90		0.029	5.73	38.20
120		0.035	6.98	46.50
125	6.8 (SIF)	0.046	9.17	61.13
130		0.057	11.40	76.00
135		0.060	11.99	79.96
140		0.062	12.35	82.32
150		0.066	13.27	88.47
165		0.068	13.69	91.27
180		0.070	14.01	93.40
210		0.072	14.32	95.45
240		0.073	14.52	96.81
300		0.074	14.89	99.27



Σχήμα 1. *In-vitro* release of oregano essential oil at stomach and intestinal pH.

From Table 1 and Figure 1, it can be seen that the delay in the release of oregano essential oil is moderate for the first 2h (SGF), since 46.5% of the oil is released. It also appears that 14.89 mg (of the total of 15 mg of oregano essential oil used for the assay) are released after 5h.

C. Conclusions

In conclusion, from the present study managed by ELKE with project code 99819 we can extract the following:

- The final dried granules had a nominal content of oregano essential oil of 5.0% (hydrodistillation, ISO 6571:2008).
- The *in-vitro* dissolution rate showed a release of 14.89 mg (of the total 15 mg) in 5 hours. During the first 2h of the study (SGF) 6.98 mg were released, while the remaining 8.02mg were released after 5h (SIF).

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