

THYMUS SERPYLLUM L. EXTRACT LOADED LIPOSOMES PRODUCED BY PROLIPOSOME METHOD

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Introduction

Polyphenols, as secondary metabolites from plants, are used as food complements or ingredients within pharmaceutical or cosmetic formulations. However, their use is rather limited, due to their low bioavailability, integrity, permeability and solubility. Namely, polyphenols sensitivity to environmental factors during food processing, distribution or storage, or in the gastrointestinal tract, also limit their activity and the potential health benefits. Thus, the encapsulation of polyphenol extracts represents an appropriate way to overcome the mentioned disadvantages.

Materials and methods

Extraction from *T. serpyllum* (heat-assisted extraction, 80°C, 50% ethanol)

Encapsulation into Phospholipon 90 liposomes (proliposome method)

- ❖ Total polyphenol content
- ❖ Encapsulation efficiency
- ❖ Particle size
- ❖ Polydispersity index
- ❖ Zeta potential



Results and Discussion

Total polyphenol content of extract was amounted 2.08±0.14 mg of gallic acid equivalents/mL, whereas encapsulation efficiency was 89.4±0.8%. Particle size, polydispersity index and zeta potential of empty and extract loaded liposomes were measuring during 28 days. During 28-days stability study, particle size of empty liposomes varied between 420.6±4.3 and 581.6±3.4 nm with polydispersity index from 0.109±0.067 to 0.295±0.009, while size of extract loaded liposomes was between 278.7±1.5 and 456.4±9.3 nm with polydispersity index 0.179±0.094 to 0.284±0.005. Zeta potential of empty liposomes varied from -17.1±0.2 to -27.3±0.5 mV, whereas zeta potential of extract loaded liposomes was between -13.6±0.3 and -25.4±1.4 mV.

Liposomes+extract	Particle size [nm]	PDI	Zeta potential [mV]
1 st day	278.7±1.5	0.256±0.010	-19.2±0.2
7 th day	229.6±9.1	0.220±0.010	-18.8±0.5
14 th day	286.7±7.6	0.179±0.093	-24.6±0.6
21 st day	356.4±9.3	0.248±0.046	-24.7±1.0
28 th day	355.0±4.0	0.176±0.048	-16.3±0.2
Empty liposomes			
1 st day	420.6±4.3	0.259±0.013	-17.6±0.3
7 th day	581.6±3.4	0.269±0.080	-16.2±0.4
14 th day	523.2±0.5	0.109±0.067	-17.3±0.4
21 st day	547.3±11.1	0.295±0.009	-16.4±0.3
28 th day	558.0±11.2	0.173±0.057	-17.1±0.2

Conclusion

The aim of this study is to provide evidence for food and pharmaceutical manufacturers and scientists to make broader use of *T. serpyllum* loaded liposomes that can add value and improve the quality of existing food, pharmaceutical and cosmetic products.

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