



Universitatea Tehnică a Moldovei

**IMPACTUL EXTRACTULUI DE JOSTA
ÎNCAPSULAT ASUPRA CALITĂȚII IAURTULUI
LA PĂSTRARE**

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REZUMAT

Teza de masterat cu tema „ *Impactul extractului de josta încapsulat asupra calității iaurtului la păstrare*”, autor Stînca Anastasia. Teza de master are un volum de 60 pagini, structurată în 4 capitole, concluzii și sursele bibliografice. Memoriul explicativ conține 8 figuri, 24 tabele, 107 surse bibliografice.

Iaurtul este un produs lactat popular datorită gustului său distinct și a efectelor de promovare a sănătății. Cu toate acestea, iaurtul a fost îmbogățit cu diferite produse funcționale naturale, cum ar fi fibre alimentare, micronutrienți, probiotice și compuși bioactivi, pentru a îmbunătăți proprietățile fizico-chimice, nutriționale și funcționale ale produsului. Numeroase studii au explorat fortificarea iaurtului cu ingrediente funcționale neîncapsulate în ultimul deceniu, care s-a dovedit că afectează calitatea iaurtului și stabilitatea fortifiantilor. Mai mult, iaurtul poate prezenta probleme de precipitare la combinarea cu componente funcționale hidrofobe. În ultimii ani, cercetătorii au arătat un interes aparte pentru tehnicile de micro și nano-încapsulare a fortifiantilor pentru a aborda aceste preocupări legate de fortificarea iaurtului.

Tehnologiile de micro și nano-încapsulare au fost descoperite ca o strategie viabilă pentru suplimentarea iaurtului cu nutrienți esențiali. Prin urmare, această revizuire sa concentrat pe impactul fortificării iaurtului folosind diverse ingrediente funcționale micro și nano-încapsulate pentru a îmbunătăți calitatea produsului și avantajele potențiale pentru sănătate. Iaurtul fortificat cu produse naturale încapsulate a oferit o protecție sporită compușilor încapsulați în timpul depozitării și digestiei gastrointestinale și a dezvăluit performanțe mai bune în gestionarea inflamației intestinale, anemiei, obezității, tumorigenezei și anumitor tipuri de cancer. În acest context, scopul lucrării este cercetarea și analiza impactului extractului de josta microîncapsulat asupra calității iaurtului în timpul păstrării timp de 28 zile.

În capitolul 1, s-au examinat tehnologiile de fabricare a iaurtului și clasificarea acestora, sistemele de micro și nanoîncapsulare pentru aplicații în iaurt.

În capitolul 2 sunt analizate și descrise caracteristicile de calitate, proprietățile antioxidante ale pomușoarelor de josta.

În capitolului 3 sunt descrise metodele de analiză a indicilor de calitate a iaurtului fortificat cu extract de josta microîncapsulat și tehnologia de obținere a iaurtului cu extract de josta microîncapsulat. Capitolul 4 include evoluția rezultatele științifice obținute, analiza și argumentarea acestora în timpul depozitării.

Cuvinte cheie: iaurt, josta, micro-nanoîncapsulare, depozitare, textură.

ABSTRACT

Master's thesis on the topic "*The impact of encapsulated josta extract on the quality of yogurt during storage*", author Stîncă Anastasia. The master's thesis has a volume of 60 pages, structured in 4 chapters, conclusions and bibliographical sources. The explanatory memorandum contains 8 figures, 24 tables, 107 bibliographical sources.

Yogurt is a popular dairy product due to its distinct taste and health-promoting effects. However, yogurt has been enriched with various natural functional products, such as dietary fibers, micronutrients, probiotics and bioactive compounds, to improve the physicochemical, nutritional and functional properties of the product. Numerous studies have explored the fortification of yogurt with non-encapsulated functional ingredients in the last decade, which has been shown to affect the quality of yogurt and the stability of fortifiers. Furthermore, yogurt may present precipitation problems when combined with hydrophobic functional components. In recent years, researchers have shown particular interest in micro- and nano-encapsulation techniques of fortifiers to address these concerns related to yogurt fortification.

Micro- and nano-encapsulation technologies have been discovered as a viable strategy for supplementing yogurt with essential nutrients. Therefore, this review focused on the impact of yogurt fortification using various micro- and nano-encapsulated functional ingredients to improve product quality and potential health benefits. Yogurt fortified with encapsulated natural products provided enhanced protection to the encapsulated compounds during storage and gastrointestinal digestion and revealed better performance in managing intestinal inflammation, anemia, obesity, tumorigenesis and certain types of cancer. In this context, the aim of the work is to investigate and analyze the impact of microencapsulated josta extract on yogurt quality during 28-day storage.

In Chapter 1, yogurt manufacturing technologies and their classification, micro- and nanoencapsulation systems for yogurt applications were examined.

In Chapter 2, the quality characteristics, antioxidant properties of josta berries are analyzed and described.

In Chapter 3, the methods for analyzing the quality indices of yogurt fortified with microencapsulated josta extract and the technology for obtaining yogurt with microencapsulated josta extract are described.

Chapter 4 includes the evolution of the obtained scientific results, their analysis and argumentation during storage.

Keywords: yogurt, josta, micro-nanoencapsulation, deposition, texture.

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INTRODUCERE

Iaurtul, unul dintre cele mai consumate produse lactate fermentate, ajută la menținerea sănătății metabolice și la menținerea unui model alimentar echilibrat. În plus, este o opțiune mai bună decât laptele pentru cei care au intoleranță la lactoză, deoarece fermentarea lactozei de către bacteriile din cultura de iaurt face ca acest produs să fie mai digerabil [1]. β -galactozidaza este enzima responsabilă de fermentarea lactozei. Peste 70% din populația lumii suferă de intoleranță la lactoză din cauza absenței sau deficienței β -galactozidazei în intestinul subțire [2, 3].

În ultimul deceniu, cercetătorii și producătorii comerciali și-au exprimat un interes puternic pentru fortificarea iaurtului prin adăugarea unei varietăți de produse naturale, cum ar fi compuși bioactivi, fibre alimentare, vitamine, minerale, probiotice și o combinație a acestora.

Scopul fortificării a fost de a crește valoarea nutrițională, de a îmbunătăți calitatea produsului și de a îmbunătăți capacitatea de comercializare [4].

Cu toate acestea, multe dintre aceste substanțe fortifiante, cum ar fi polifenolii (flavonoide, antocianine), acizi grași esențiali (acizi grași omega-3) și probiotice (*Lactobacillus acidophilus*), sunt vulnerabile la degradarea oxidativă, tratamentele termice, pH, ingrediente alimentare (săruri și zaharuri) și condiții de depozitare [5]. Mai mult, atunci când iaurtul fortificat este expus la condițiile de pH al stomacului, ingredientele bioactive sensibile sunt eliberate și suferă la degradare gastrică, ceea ce poate duce la o biodisponibilitate scăzută și la efecte biologice inadecvate [6, 7]. Prin urmare, ingredientele fortifiante trebuie să rămână intacte în cantități adecvate în produsele alimentare și în organismul uman pentru a obține efectele dorite de promovare a sănătății.

Mai multe strategii de micro- și nanoîncapsulare, inclusiv emulsionare, coacervare complexă, extrudare, gelificare, auto-asamblare, uscare și o combinație de două sau mai multe tehnici, au fost utilizate pe scară largă pentru a construi astfel de produse încapsulate [8, 9]. Încapsularea poate proteja compusul de bază de provocările de mediu, cum ar fi oxigenul, lumina, pH-ul, radicalii liberi și altele [10]. Poate îmbunătăți solubilitatea, stabilitatea fizico-chimică, proprietățile de eliberare, bioaccesibilitatea și biodisponibilitatea compușilor activi [10]. Ajută la inhibarea aromelor neplăcute și a mirosurilor puternice, care pot avea un impact negativ asupra calității senzoriale a produselor alimentare [11, 12]. Micro- și nanocapsulele pot fi, de asemenea, utilizate ca stabilizatori și agenți de texturare în iaurturi pentru a îmbunătăți proprietățile microstructurale.

Actualitatea temei: Iaurtul este considerat unul dintre cele mai populare produse lactate fermentate. Consumatorii solicită iaurt nu numai din cauza biodisponibilității

nutrienților esențiali care rezultă din activitatea bacteriană a iaurtului dar și pentru variațiile largi de produse care sunt disponibile din punct de vedere al texturii și aromei. În consecință, iaurtul cu extract de josta microîncapsulat este îmbogățit cu diverse substanțe bioactive așa ca compuși fenolici, acizi organici, vitamin și altele.

Scopul tezei de licență: Analiza adaosului de extract de josta încapsulat asupra calității iaurtului în timpul păstrării.

Obiective:

- Analiza literaturii de specialitate privind fabricarea iaurtului clasic inclusive fortificat cu compuși biologic active.
- Analiza surselor bibliografice privind caracteristica fructelor de Josta.
- Obținerea iaurtului și identificarea metodelor de analiză a calității iaurtului cu adaos de extract de josta microîncapsulat.
- Cercetarea indicilor de calitate a iaurtului cu extract de josta microîncapsulat pe durata de păstrare.

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