



Universitatea Tehnică a Moldovei

**DINAMICA ACUMULĂRII CBA ȘI INFLUENȚA EI
ASUPRA CALITĂȚII CĂTINEI**

Student:

Wenxuan Zhang

Conducător:

Baerle Alexei dr., conf. univ.

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Rezumat

Obiectiv: Stabilirea unei metode analitice pentru determinarea vitaminei C în cătină prin cromatografie lichidă de înaltă performanță cu detector cu diode (HPLC-PDA) pe baza exemplurilor experimentale de diferiți detectori în cromatografie lichidă de înaltă performanță.

Metode: O coloană C18 cu fază inversă „Phenomenex” (150 mm × 4,5 mm, pori 0,08 μm) a fost utilizată cu apă care conține 0,01% acid tricloracetic ca fază mobilă A și acetonitril care conține 0,1% acid acetic ca fază mobilă B la flux de viteză de 0,5 ml/min cu gradient de eluare și o temperatură a coloanei de 30°C. Vitaminele B și C sunt detectate la 245 și, respectiv, 243 nm.

Concluzie: Fructele de cătină conțin substanțe cu activitate biofiziolgică dovedită. Acestea includ esterii acidului palmitoleic, acidul L-ascorbic și niacina (vitamina B3). Activitatea fiziologică a fructelor coapte din diferite soiuri de cătină a crescut în următoarea ordine: „Cora” < „Clara” ≈ „Dora” < „Mara”. Astfel, cătină are proprietăți antidiabetice semnificative, normalizând secreția de insulină și SOD și combaterea stresului oxidativ și a obezității. Totodată, modelul stabilit experimental permite utilizarea analizei cromatografice simultane a vitaminelor solubile în apă ca o bună metodă analitică pentru determinarea obiectivă a gradului de coacere și a valorii biologice a fructului, făcând din această metodă una viabilă pentru aprecierea calității și siguranței compozițiilor alimentare, care conțin cătină.

摘要

目的 基于高效液相色谱法不同检测器的实验案例，建立高效液相色谱-二极管阵列检测器（HPLC-DAD）法测定沙棘中维生素 C 的分析方法。**方法** 采用 Reverse-phase C₁₈-column “Phenomenex” (150 mm × 4.5 mm, pores 0.08 μm) 色谱柱，以含 0.01% 三氯乙酸的水为流动相 A，含 0.1% 乙酸的乙腈为流动相 B，流速为 0.5 mL/min，梯度洗脱，柱温 30°C，维生素 B 和 C 的检测波长分别为 245 和 243 nm。**结论** 沙棘果实中含有经证实具有生物生理活性的物质。这些物质包括棕榈油酸酯、L-抗坏血酸以及烟酸（维生素 B₃）。不同品种沙棘成熟果实的生理活性按以下顺序增加：“Cora” < “Clara” ≈ “Dora” < “Mara”。因此，沙棘具有显著的抗糖尿病特性，能够使胰岛素和 SOD 分泌正常化，并对抗氧化应激和肥胖。同时，实验建立的模式允许使用水溶性维生素的同步色谱分析作为客观确定水果成熟程度和生物学价值的良好分析方法，因此该方法为评估含有沙棘的食品组合物质量和安全性的可行方法。

Summary

Objective: To establish an analytical method for the determination of vitamin C in sea buckthorn by high performance liquid chromatography with diode array detector (HPLC-DAD) based on experimental examples of different detectors in high performance liquid chromatography.

Methods: A Reverse-phase C18-column "Phenomenex" (150 mm × 4.5 mm, pores 0.08 μm) column was used with water containing 0.01% trichloroacetic acid as mobile phase A and acetonitrile containing 0.1% acetic acid as mobile phase B at a flow rate of 0.5 mL/min with gradient elution and a column temperature of 30°C. Vitamins B and C are detected at 245 and 243 nm respectively.

Conclusion: Sea buckthorn fruits contain substances with proven biophysiological activity. These include palmitoleic acid esters, L-ascorbic acid and niacin (vitamin B3). The physiological activity of the ripe fruits of different varieties of sea buckthorn increased in the following order: "Cora" < "Clara" ≈ "Dora" < "Mara". Thus, sea buckthorn has significant anti-diabetic properties, normalising insulin and SOD secretion and combating oxidative stress and obesity. At the same time, the experimentally established model allows the use of simultaneous chromatographic analysis of water-soluble vitamins as a good analytical method for objectively determining the degree of ripeness and biological value of the fruit, making this method a viable one for assessing the quality and safety of food compositions containing sea buckthorn.

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