DORIXONA UKROPI (FOENICULUM VULGARE MILL.) MEVASI ERKIN AMINOKISLOTALAR TARKIBINI O'RGANISH

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DOI: https://doi.org/10.55475/jcgtm/vol4.iss2.2025.495

Kalit so'zlar:
Dorixona ukropi mevasi, erkin aminokislotalar

Annotatsiya

Dorixona ukropi mevasi erkin aminokislotalari YuSSX usulida o'rganildi. Unda umumiy miqdori 35 mg/g bo'lgan 20 ta aminokislota aniqlandi. Ular orasida prolin (4,798 mg/g) dominant bo'lib, tsisteinning (0,156 mg/g) miqdori minimal bo'ldi. Olingan natijalar xomashyodagi biokimyoviy jarayonlarni o'rganishda va uning uchun normativ hujjatlarni ishlab chiqishda qo'llanilishi mumkin.

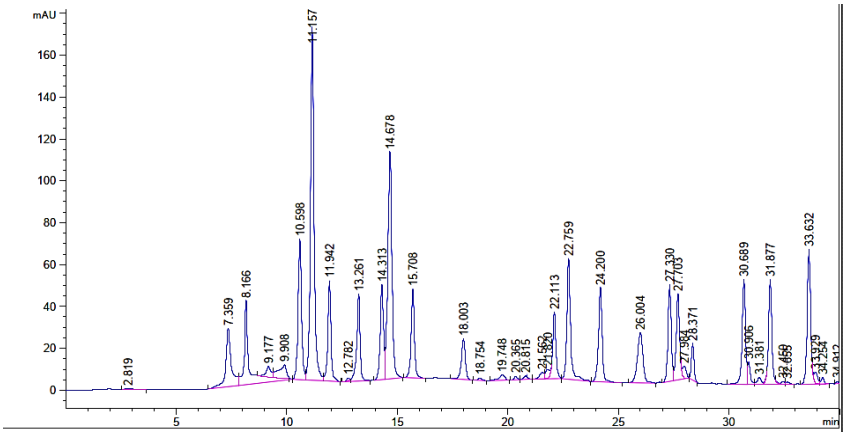
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Umarov, U. A. o'g'li, Fatxullayeva, M., Chinibekova, N. K., Abdullayev, E. B. o'g'li, & Bahodirova, R. U. qizi. DORIXONA UKROPI (FOENICULUM VULGARE MILL.) MEVASI ERKIN AMINOKISLOTALAR TARKIBINI O'RGANISH. Tovarlar Kimyosi Va Xalq Tabobati Jurnali, 4(2). https://doi.org/10.55475/jcgtm/vol4.iss2.2025.495

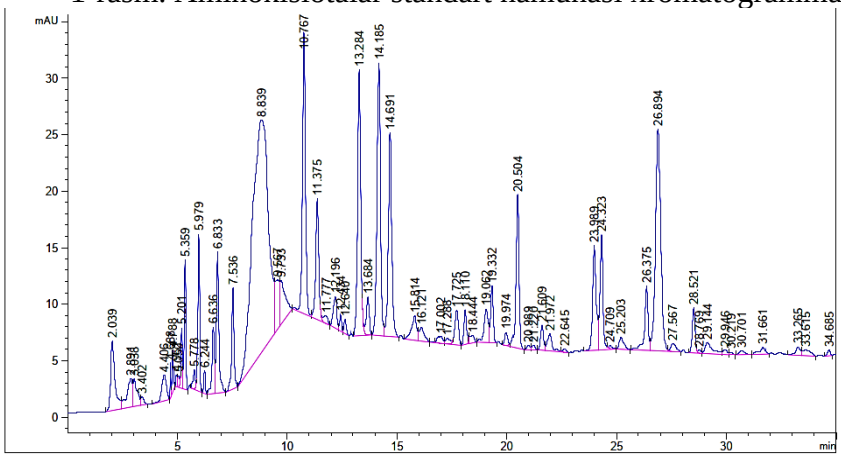
Kirish. Dorixona ukropi (Foeniculum vulgare Mill.) – soyabonguldoshlar (Apiaceae yoki Umbelliferae) oilasiga mansub bo'lgan [1], kelib chiqishi O'rta yer dengizi hisoblangan, dunyoning deyarli barcha mintaqasida tarqalgan o'simlikdir [2]. Mevasi efir moyiga boy bo'lib, 6% gacha

saqlaydi. Dorixona ukropi bargi ekstraktlari tarkibiga A, C, B_1, B_2, PP vitaminlari, kaliy, natriy, kaltsiy, marganes kabi elementlar [3] va yog' kislotalari kiradi [4]. Undan tashqari o'simlikda flavonoidlar, fenol kislotalari ham o'rganilgan [5]. Dorixona ukropi qon suyultiruvchi, gepatoprotektor, qondagi lipidlarni kamaytirish va boshqa shu kabi farmakologik faolliklarni namoyon qilishi isbotlangan [6,7]. Xalq tabobatida sut xaydovchi, meteorizmni bartaraf etishda, og'iz yuzasi kasalliklarini davolashda vosita sifatida qo'llaniladi [8]. Ma'lumki o'simlikdagi biologik faol moddalar hosil bo'lishida boshlang'ich moddalar sifatida turli xil kichik molekulali birikmalar qatnashadi va bunga aminokislotalarni misol qilish mumkin. Masalan, ulardan flavonoidlar va alkaloidlar sintez bo'ladi. Ular o'simlik xomashyosi tarkibida erkin va bog'langan holatda uchraydi. Ularning tahlili o'simlik xomashyosida kechadigan biokimyoviy jarayonlarni tushunish imkonini beradi. Yuqoridagilarni hisobga olib, farmatsevtikada va oziq-ovqat sanoatida keng qo'llaniladigan dorixona ukropi mevasi aminokislotalari haqidagi ma'lumotlar yetarli bo'lmaganligi sababli, ularni o'rganish taqdiqotning maqsadi bo'ldi.

Tadqiqot natijalari. Olingan tadqiqot natijalariga ko'ra, dorixona ukropi mevasi tarkibida erkin 20 xil aminokislotalar aniqlanib, ularning umumiy miqdori 35 mg/g ga teng bo'ldi. Funktsional guruhlar tasnifi bo'yicha, ulardan 5 tasi monoaminomonokarbon, 2 tadan oksimonoaminokarbon, monoaminodikarbon, monoaminodikarbon kislotalar amidi, diaminomonokarbon, oltingugurt saqlagan, 3 tadan aromatik, geterotsiklik, 1 tasi iminokislotalar guruhlariga kiritildi. Odam organizimida sintez bo'lishiga qarab esa almashinadigan aminokislotalar 12 tani, almashinmaydigan aminokislotalar 8 tani tashkil etdi (1,2 jadvallar).



1-rasm. Aminokislotalar standart namunasi xromatogrammasi



2-rasm. Sinov eritmasi xromatogrammasi

1-jadval. Dorixona ukropi mevasi erkin aminokislotalar tarkibi

Aminokislotalarning nomi	**Kontsentratsiya mg/g**

Asparagin kislotasi	3,789
Glutamin kislotasi	1,478
Serin	2,442
Glitsin	0,928
Asparagin	0,952
Glutamin	0,519
Tsistein	0,156
Treonin	0,470
Arginin	1,212
Alanin	4,554
Prolin	4,798
Tirozin	0,482
Valin	2,126
Metionin	0,510
Gistidin	1,462
Izoleytsin	1,819
Leytsin	1,978
Triptofan	0,757
Fenilalanin	4,227
Lizin	0,335
Jami	**34,994**

2-jadval. Tadqiqot natijasida aniqlangan aminokislotalarning tasnifi

Aminokislotalarning funtsional guruhi bo'yicha tasnifi	
Alifatik	*Aminokislotalar nomi*
Monoaminomonokarbon	Glitsin, alanin, valin, izoleytsin, leytsin
Oksimonoaminokarbon	Serin, treonin
Monoaminodikarbon	Asparagin kislotasi, glutamin kislotasi
Monoaminodikarbon kislotalar amidi	Asparagin, glutamin
Diaminomonokarbon	Lizin, arginin
Oltingugurt saqlagan	Tsistein, metionin
Aromatik	Fenilalanin, tirozin, triptofan
Geterotsiklik	Triptofan, gistidin, prolin
Iminokislotalar	Prolin
Aminokislotalarning odam organizimida sintez bo'lishiga qarab tasnifi	
Almashinadigan	*Almashinmaydigan*
Glitsin	Valin
Alanin	Izoleytsin
Prolin	Leytsin
Serin	Treonin
Tsistein	Metionin
Asparagin kislotasi	Lizin
Asparagin	Fenilalanin
Glutamin kislotasi	Triptofan

Glutamin	
Tirozin	
Arginin (shartli almashinadigan)	
Gistidin (shartli almashinadigan)	

Tajriba qism. Tadqiqot obyekti sifatida dorixona ukropining 2024-yil Toshkent shahrida yetishtirilgan mevasi olindi. 1 g (aniq tortim) maydalangan dorixona ukropi mevasiga 1 ml (aniq hajm) 20% li triftorsirka kislota qo'shildi va aralashtirildi. 10 daqiqadan so'ng, hosil bo'lgan cho'kma 15 daqiqa davomida 8000 aylanish tezligida tsentrifugalash orqali ajratildi. 0,1 ml supernatant ajratilgandan so'ng, u liofilizatsiya qilindi. Gidrolizat bug'latildi, quruq qoldiq trietilamin-atsetonitril-suv (1:7:1) aralashmasida eritildi va quritildi. Kislotani neytrallash uchun bu jarayon ikki marta takrorlandi. Aminokislota hosilalarini aniqlash YuSSX (Yuqori samarali suyuqlik xromatografiyasi) usuli yordamida amalga oshirildi. Aminokislotalarning feniltiokarbamil hosilalari ularning feniltioizosiyanat bilan reaksiyasi orqali olindi [9]. Tahlilni olib borishda asparagin kislotasi, glutamin kislotasi, serin, glitsin, asparagin, glutamin, tsistein, treonin, arginin, alanin, prolin, tirozin, valin, metionin, gistidin, izoleytsin, leytsin triptofan, fenilalanin, lizin standartlaridan foydalanildi.

Xromatografiyalash sharoitlari:

- Uskuna: diod-matritsa detektorli Agilent Technologies 1200 modelli xromatograf;
- Qo'zg'almas faza:75x4,6 mm o'lchamli Discovery HS C18 modelli kolonka;
- Qo'zg'aluvchan faza A: 0,14 M li natrit atsetati + 0,05% trietilamin, pH 6,4;
- Qo'zg'aluvchan faza B: atsetonitril;
- Oqim tezligi 1,2 ml/min;
- Detektorlash; 269 nm;
- In'ektsiya hajmi: 5 mkl.

Xromatografiyalash gradiyent rejimida olib borildi:

3-jadval. Xromatografiyalash gradiyent rejimi dasturi

Vaqt, min	**Qo'zg'aluvchan faza A, %**	**Qo'zg'aluvchan faza B, %**
0	100	0
2,5	94	6
40	70	30
45	40	60
50	40	60
55	100	0

Xulosa. Dorixona ukropi mevasi erkin aminokislotalar tarkibi o'rganildi. Natijada bir vaqtning o'zida geterotsiklik va iminokislotalar guruhlariga kiruvchi, almashinadigan prolin aminokislotasi (4,798 mg/g) ko'p miqdorda ekanligi ma'lum bo'ldi. Prolindan so'ng miqdori bir-biriga yaqin bo'lgan alanin (4,554 mg/g) bilan fenilalanin (4,227 mg/g), serin (2,442 mg/g), valin (2,126 mg/g), leytsin (1,978 mg/g) lar bilan izoleytsin (1,819 mg/g), glutamin kislotasi (1,478 mg/g), gistidin (1,462 mg/g), lar bilan arginin (1,212 mg/g), glitsin (0,928 mg/g) bilan asparagin (0,952 mg/g), glutamin (0,519 mg/g) bilan metionin (0,510 mg/g), tirozin (0,482 mg/g) bilan treonin (0,470 mg/g) aniqlandi. Aniqlangan aminokislotalar orasida tsisteinning (0,156 mg/g) miqdori eng kam bo'ldi.

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