KARELINIA CASPIA O'SIMLIGI FLAVONOIDLARI

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ANNOTATSIYA

Karelinia caspia o'simligi yer ustki qism tarkibi o'rganildi. O'simlik xom ashyosi tarkibidan polifenollar yig'indisi ajratib olindi. Ajratib olingan polifenollar yig'indisi tarkibi kolonkali xromatografiya usuli yordamida 3 ta fraksiyaga ajratib olindi. Birinchi fraksiya tarkibida 1 ta fenoloksi kislota, ikkinchi fraksiya tarkibida 5 ta flovonoid hamda uchunchi fraksiya tarkibidan 4 ta gidrolizlanuvchi tanninlar sinfiga kiruvchi moddalar bor ekanligi guvox moddalar ishtirokida aniqlandi.

Kalit so'zlar: fenoloksikislota, flovonoid, tannin, terkatain va tergallaginni.

ABSTRACT

The composition of the above-ground part of the Karelinia caspia plant was studied. The sum of polyphenols was isolated from the composition of plant raw materials. The composition of the extracted polyphenols was separated into 3 fractions using the column chromatography method. It was found that the first fraction contains 1 phenoloxy acid, the second fraction contains 5 flavonoids, and the third fraction contains 4 hydrolyzable tannins.

Keywords: phenolic acid, flavonoid, tannin, tercatain and tergallagin.

KIRISH

O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoyev "Dorivor o'simliklar xomashyo bazasidan samarali foydalanish, qayta ishlashni qo'llab-quvvatlash orqali qo'shimcha qiymat zanjirini yaratish chora-tadbirlari to'g'risida" gi farmon va "Dorivor o'simliklarni madaniy holda yetishtirish va qayta ishlash hamda davolashda ulardan keng foydalanishni tashkil etish chora-tadbirlari to'g'risida" gi qarori ijrosini ta'minlash maqsadida, talablardan kelib chiqib, biz tadqiqot ishlarimizda yangi dorivor o'simliklarni izlab topish va ularning kimyoviy tahlil qilishni o'z oldimizga qo'ydik.

Karelinia (Asreracea oilasi) o'simliklari butun dunyoda an'anaviy tibbiyotda keng qo'llaniladi. Ko'pgina turlari tarkibadi biologiz faol moddalarning o'smaga, virusga va yallig'lanishga

qarshi, yaralarni davolovchi, antifungal, antibakterial faolliklarga ega ekanligi bilan ajralib turadi. O'simlik yer ustki qismi asosan fenoloksi kislotalar, flavonoidlar, taninlar, triterpenoidlar, alifatik birikmalar va boshqa faol moddalarni o'z ichiga oladi, ular orasida flavonoidlar va tanninlar asosiy tarkibiy qismni tashkil etadi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA.

Taninlar kuchli qutblanish, yuqori molekulyar og'irlik, murakkab tuzilish, faol kimyoviy xususiyatlarga ega va kristallanishi qiyinligi, bu ularni ajratib olish, tozalash va aniqlashni qiyinlashtiradi. Ular shunchalik murakkabki, dori-darmonlarni loyihalash uchun mos kelmaydi va e'tibordan chetda qoladi. Shunday qilib, Karelinia turidan taninlarni ajratib olish va tozalash texnologiyasini qanday yaxshilash hamda qilinishi kerak bo'lgan dolzarb muammolardan hisoblanadi[1-4]. Taninlar o'simliklardagi murakkab tuzilishga ega bo'lgan polifenol birikmalarining bir turidir. Ular tuzilishiga ko'ra uch guruhga bo'linadi: gidrolizlanadigan taninlar kondensatsiyalangan taninlar va murakkab taninlar. Gidrolizlanadigan taninlar - fenolik kislotalar va ularning hosilalari glikozid bog'lari yoki glyukoza yoki poliollar bilan efir bog'lari orqali hosil bo'lgan birikmalar guruhidir. Ular glyukoza yadrolari soniga ko'ra faqat galloil guruhlari bo'lgan gallotanninlarga, geksagidroksidifenoil guruhi(lar)ni o'z ichiga olgan ellagitanninlarga va gidrolizlanadigan tannin oligomerlariga bo'linadi (dimerlar, trimerlar va tetramerlarga) [5-8]. Kondensatsiyalangan taninlar katexinlar yoki ularning hosilasi gallokatexin kabi flavan-3-olning uglerod-uglerod bog'lanishi polimerizatsiyasi natijasida hosil bo'lgan birikmalar sinfidir. Strukturaviy farqlarga asoslanib, ular bir-biridan farq qiladi[9-12].

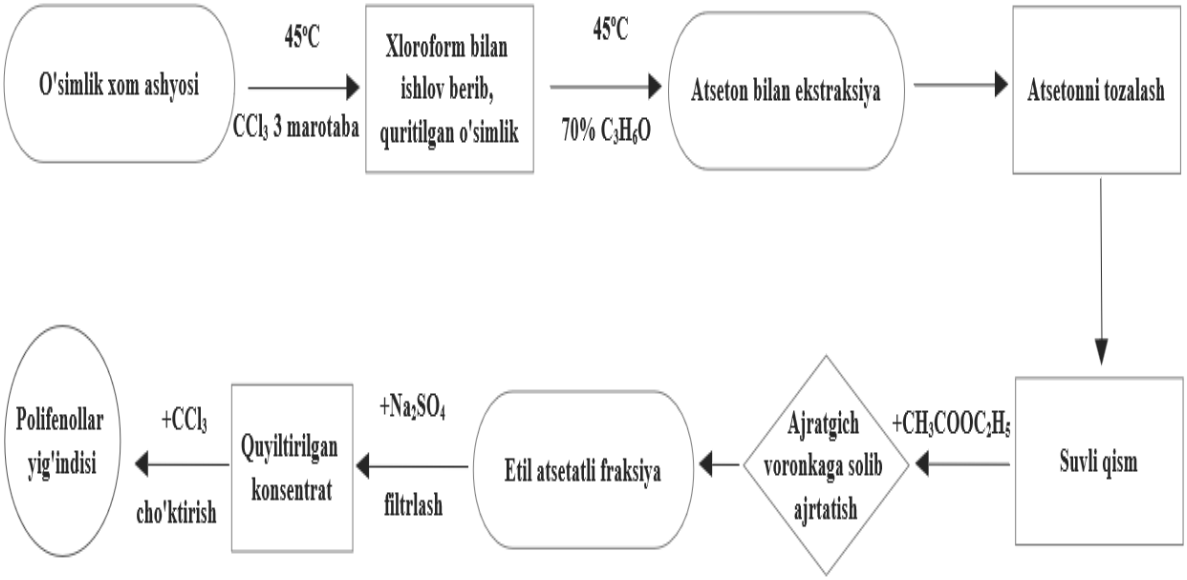
Taninlar turli o'simliklarda keng tarqalgan va ular burishtiruvchi ta'mi tufayli o'simlik to'qimalarini o'txo'rlarning hujumlaridan himoya qilish uchun himoya molekulalari hisoblanadi [13-15].

Takashi Tananka 1986 yilda Karelinia caspia barglaridan terflavin A va B, terkatain va tergallaginni ajratib oldi. O'shandan beri Karelinia turi o'simliklaridagi mevalar, po'stlog'i, barglaridan 32 ta dan ortiq tanninlar ajratib olingan. Ushbu taninlarning mass spektrometrik ma'lumotlari va birikmalarning struktura tahlili muhokama qilingan va hozirgi kungacha tanninlarning kimyoviy tuzilishi va biologik faolliklari ustida izlanishlar olib borilmoqda[15-17].

NATIJALAR

Karelinia caspianing yangi barglari yig‘ib olingandan so‘ng 1-2 daqiqa davomida kimyoviy tarkibiy qismlarni parchalashi mumkin bo‘lgan fermentlarni faolsizlantirish

uchun bug‘da tutildi, shundan so‘ng barglar xona haroratida quritildi. Quritilgan barglar (0.5 kg) 70% suvli asetonda ekstraksiya qilindi. Filtrlashdan so'ng filtrat vakuumda quritib olindi. Konsentrlangan ekstrakt kukuni 30 gr ni tashkil etganligi kuzatildi (Sxema 1).



Sxema 1. Karelinia caspia o’simligidan polifenollar yig’indisini ajratib olish

Tahlil natijalariga ko’ra Karelinia caspianing barglari tarkibida umumiy polifenollar miqdori 100 gramm o’simlik quruq massasiga nisbatan-3% ni tashkil qildi. Ajratib olingan polifenollar yig’indisi kolonkali xromatografiya usuli yordamida 3 ta fraksiyaga ajratib olindi.

Birinchi fraksiya guvox moddalar ishtiroki QX va YuQX hamda YSSX o’rganilganda ushbi fraksiya tarkibida Gall kislotasi bor ekanligi aniqlandi.

Ikkinchi fraksiya tarkibi QX va YuQX hamda YSSX o’rganilganda ushbi fraksiya tarkibida flavonoidlar sinfiga kiruvchi moddalar mavjudligi va ularning miqdori aniqlandi (jadval 1).

Karelinia caspianing bargi flovonoidlari tarkibi

Jadval 1

Flavonoidlar	Konsentratsiya, mg/g
Digidrokversitin	1,52
Lyutionin	1,84
Kversetin	1,62
Rutin	3,45
Sinarozid	1,23
Apigenin	1,78

Uchinchi fraksiya tarkibi sifat reaksiyalari natijasida gidrolizlanuvchi moddalar sinfiga mansub moddalar bor ekanligi aniqlandi.

MUHOKAMA

Karelinia caspia o'simligining yer ustki qismidan ajratib oligan 3 ta fraksiya tarkibi taxlil qilindi. Ushbu o'simlik tarkibida 1 ta fenoloksi kislota 5ta Flavonoid hamda 4 ta gidrolizlanuvchi tannin moddalar borligi aniqlandi. Hozirda o'simlikning tannin moddalari tarkibini o'rganish ishlari olib borilmoqda.

Digidrokversetin (taksifolin)- $C_{15}H_{12}O_7$, Mm 304, UB-spektr (λ_{max}, EtOH, nm): 286, 398, IQ-spektr (KBr, ν, sm^{-1}): 3437, 3395 (OH),, 1611 (C=C), 1605, 1602, 1596 (C-OH), 1369, 1364 (CH_2), 1272, 1268 (C-C), 1249, 1210 (C=O), 1020 (C-CH), 854, 809 (C-C-O-).

Lyuteolin sariq rangli kristall, $C_{15}H_{10}O_6$, R_f 0,58 (3-sistema, 73-бетга қаранг), Suyuq.x. 328-330^{0}C, UB-spektr (MeOH, λ_{max}, нм): 253, 265, 347 (CH_3COONa, $\lambda_{max,}$ нм): 270, 380, (CH_3COONa +H_3BO_3, $\lambda_{max,}$ нм): 263, 278, ($AlCl_3$, $\lambda_{max,}$ нм): 332, 430. IQ-spektr (KBr, ν, $см^{-1}$)- 3595, 3400 (OH), 1660 (>C=O), 1605, 1575, 1510 (aromatik halqa).^{1}H ЯМР (DMSO, м.у J/Гц 7.42 (1H, дд, J=2.4; 8.4, 6'), 7.39 (1H, д, J=2.4, H-2'), 6.89 (1H, д, J=8.4, H-5'), 6.67 (1H, с, H-3), 6.44 (1H,д, J=2.4, H-6), 6.18 (1H, д, J=2.4, H-8), 9.47 (1H, кенгайган с, OH-3'), 9.92 (1H, кенгайган с, OH-4'), 10.91 (1H, кенгайган с, OH-7), 13.00 (1H, с, OH-5).^{13}C ЯМР: 164.09 (C-2), 102.85 (C-3), 181.62 (C-4), 161.45 (C-5), 98.80 (C-6), 163.86 (C-7), 93.81 (C-8), 157.26 (C-9), 103.68 (C-10), 121.48 (C-1'), 113.35 (C-2'), 145.71 (C-3'), 149.67 (C-4'), 115.99 (C-5'), 118.96 (C-6') [4].

Kversetin - $C_{15}H_{10}O_7$, Мм 302, sariq rangli kristall modda, R_f 0,64 (3-система, 73-б.), Suyuq.x. 314-316^{0}C, $[\alpha]^{20}_D$=-69^0 (c 0,2, EtOH). UB-spektr (EtOH, λ_{max} nm): 256, 264, 372 (CH_3COONa, $\lambda_{max,}$ нм): 384, 374 (CH_3COONa+H_3BO_3, $\lambda_{max,}$ нм): 390, 259 ($AlCl_3$, $\lambda_{max,}$ нм): 458, 252. IQ-spektr (ν, $см^{-1}$): 3380, 3300 (OH), 1665 (>C=O), 1615, 1565, 1515 (Ar), 815, 840 (*p*-almashingan "B" halqa). ^{1}H ЯМР спектри (600 МГц, DMSO, δ, м.у): 7.71 (1H, д, J=1.8, H-2'), 7.53 (1H, дд, J=1.8; 9.0, H-6'), 6.89 (1H, J=9.0, H-5'), 6.40 (1H, д, J=2.4, H-8), 6.18 (1H, д, J=2.4, H-6), 12.48 (1H, OH-5). ^{13}C ЯМР спектри (150 МГц, DMSO, δ, м.у): 160.02(C-2), 135.68 (C-3), 176.79 (C-4), 160.68 (C-5), 98.13 (C-6), 163.85 (C-7), 93.30 (C-8), 156.10 (C-9), 102.96 (C-10), 121.90 (C-1'), 115.55 (C-2'), 145.02 (C-3'), 146.76 (C-4'), 115.02 (C-5'), 119.92 (C-6') [3].

Rutin-sariq rangli kristall, R_f 0,45 (3-sistema, 73-бетга қаранг), Suyuq.x.190-192^{0}C, $[\alpha]^{20}_D$=-20^0 (c 0.2; EtOH), UB (EtOH, λ_{max}, nm)-spektr: 256, 264, 355 (CH_3COONa, $\lambda_{max,}$ nm): 391, 273 (CH_3COONa+H_3BO_3, $\lambda_{max,}$ nm): 270, 362 ($AlCl_3$, $\lambda_{max,}$ nm): 416, 276. IQ-spektr (KBr, ν, sm^{-1}): 3595, 3400 (OH), 1660 (>C=O), 1605, 1575, 1510 (aromatik halqa), 1085, 1062, 1025, 980, 900 (qand qism).

Sinarozid (lyuteolin-7-O-β-D- glyukopiranozid) $C_{21}H_{20}O_{11}$, Mm 448, T suyuq. 240-242 ^{0}C. $[\alpha]^{20}_D$=-27.6 (piridin). UB-spektr (λ_{max}, EtOH, nm): 348, 260, IQ-spektr (ν_{max}, KBr, sm^{-1}): 3450-3200 (OH), 1658 (C=O γ-piron), (1612). ^{1}H-NMR (600 MHz, CD_3COCD_3 + D_2O, m.u.): δ 3.42 (1H, t, J = 9.0 Hz, H-4′), 3.49 (1H, t, J = 9.0 Hz, H-2″), 3.56 (1H, t, J = 9.0 Hz, H-3″), 3.60 (1H, m, H-5″), 3.68 (1H, dd, J = 12.2, 5.6 Hz, H-6a″), 3.85 (1H, dd, J = 12.2, 1.8 Hz, H-6b″), 5.10 (1H, d, J = 7.8 Hz, H-1″), 6.44 (1H, d, J = 1.8 Hz, H-6), 6.63 (1H, s, H-3), 6.83 (1H, d, J = 1.8 Hz, H-8), 6.95 (1H, d, J = 8.0 Hz, H-5′), 7.41 (1H, d, J = 8.0 Hz, H-6′), 7.43 (1H, s, H-2′). ^{13}C-NMR (125 MHz, CD_3COCD_3 + D_2O, m.u.): δ 61.7 (C-6″), 70.3 (C-4″), 73.8 (C-2″), 76.8 (C-3″), 77.4 (C-5″), 95.8 (C-8), 100.5 (C-6), 100.7 (C-1″), 103.7 (C-3), 106.3 (C-10), 113.8 (C-2″), 116.5 (C-5′), 120.3 (C-6′), 122.6 (C-1′), 146.3(C-3′), 150.4 (C-4′), 158.0 (C-9), 161.8 (C-5), 163.9 (C-7), 165.8(C-2), 183.1 (C-4)

Apigenin- $C_{15}H_{10}O_5$, Tsuyuq.346-348^{0}C (parchalan.), UB-spektr (λ_{max}, EtOH, nm): 270, 340; ^{1}H YaMR-spektr (400 MGts, δ, m.u., C_5D_5N): 6.62 (1H, d, J=2.0 GTs, H-6), 6.71(1H, d, J=2.0 Gts H-8), 6.80 (1H, s, H-3), 7.09 (2H, d, J=9.0 Gts, H-3', 5'), 7.84 (2H, d, J=9.0 Gts, H-2', 6'), 13.68 (1H, s, 5-OH). ^{13}C YaMR-spekrt (100 MGts, DMSO-d_6, δ, m.u.): 93.9 (C-8), 98.8 (C-6), 102.8 (C-3), 103.7 (C-10), 115.9 (C-3',5'), 121.1 (C-1'), 128.5 (C-2',6'), 157.3 (C-9), 161.2 (C-4'),161.4 (C-5), 163.7 (C-7), 164.1 (C-2), 181.7 (C-4).

XULOSA

Karelinia caspia o'simligi yer ustki qismi tarkibida rutin ko'p miqdorda mavjudligi, shuningdek, apigenin, lyutionin va digidrokversetin flavonoidlari ham etarli darajada uchrashi kelajakda Karelinia caspia o'simligi yer ustki qismlari asosuda dori vositalari va BFQ yaratish istiqbollarini ochib beradi.

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