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DALACHOY TARKIBIDAGI FLAVONOIDALAR MIQDORINI ANIQLASH

Аннотация

Maqolada dalachoy tarkibidagi flavonoidlarni suyuqlik xromatografiyasi usuli yordamida aniqlash va uning natijalari keltirilgan. Topilgan flavonoidlarni organizmdagi kimyoviy jarayonlarga ta'siri tahliliy o'rganilgan.

Kalit so'zlar: Flavonoidlar, kversetin, rutin, dihidrokversetin, lyuteonin, suyuqlik xromatografiyasi, qandli diabet.

DETERMINATION OF THE AMOUNT OF FLAVONOIDS

Annotation

The article presents the determination of flavonoids in the dalchoi using the method of liquid chromatography and its results. The effect of the found flavonoids on chemical processes in the body was studied analytically.

Key words: Flavonoids, quercetin, rutin, dihydroquercetin, luteonin, liquid chromatography, diabetes.

ОПРЕДЕЛЕНИЕ КОЛИЧЕСТВА ФЛАВОНОИДОВ В ЗЕВРОБОЕ

Аннотация

В статье представлены определение флавоноидов в зверобое методом жидкостной хроматографии и его результаты.

Аналитически изучено влияние обнаруженных флавоноидов на химические процессы в организме.

Ключевые слова: Флавоноиды, кверцетин, rutin, дигидрокверцетин, лютеонин, жидкостная хроматография, сахарный диабет.

Kirish. Flavonoidlar o'simliklar tarkibida xalq tabobatida turli kasalliklar uchun tabiiy davolovchi vositalar sifatida ishlatiladi. Ularning juda ko'p tajribalar orqali antioksidant xususiyatlari isbotlangan va inson salomatligi uchun foydali ekanligi ko'rsatib berilgan hamda, tabiiy mahsulotlar neyrotektor sifatidagi ta'siri tufayli ko'proq e'tiborga sazovor bo'lgan, chunki ular tabiatan bitta yo'nalishda emas, balki pleyotrop ta'sir ko'rsatadi[23;19].

Kversetinni og'iz orqali 150-730mg/sutka dozada 4 haftadan 10haftagacha qabul qilish antigipertenziv ta'sir etishi aniqlangan[1]. Kversetin mRNK ekspressiyasini kamaytirish orqali renin-angiotenzin sistemasini ishini to'xtatadi va shu bilan qon hajmi ortishini oldini oladi[2]. Qonda TAG lar miqdorini kamatirib, ZYULP tarkibida xolesterin miqdorini oshiradi. NO hosil bo'lishini tezlashtirib endotelial vazodilatatsiyani ta'minlaydi. Endotelial hujayralar apoptozini kamaytiradi[3;4;5]. Qon-tomir sistemasini Kversetin hayvonlar tanasiga yuborilganda antioksidant va immun tizim faolligi oshganini kuzatishgan[6]. Turli o'tkazilgan tajribalar oksidlangan yog' ta'sirida ichaklardagi oksidlanishli stress kversetin ta'sirida pasaygani va oksidlanishli qaytarilish balansi yaxshilanib, ichak morfologik strukturasini va baryer funksiyasi tiklangani kuzatilgan[7]. Kversetin ichak mikroflorasi balansini ta'minlaydi. Bu modda ta'sirida ichak mikrobiotasini modulyatsiyalanishi kuzatilgan. Kversetin C. rodentium bilan bog'liq bo'lgan kolitni yengillashtiradi va yallig'lanishni kamaytiradi[8].

Hozirgacha diabetni to'liq davolovchi dorilar mavjud emas. Diabetda ishlatilayotgan dorilarning ayrimlari yon ta'sirlarga ega yoki uzoq qo'llanishi natijasida o'z ta'sirini yo'qotadi. Shuning uchun ham iloji boricha tabiiy vositalardan foydalanib bu kasallikni davolash maqsadga muvofiq. Chunki tabiiy vositalar yon ta'sirga ega emas. Tabiiy flavonoid rutin esa α glyukozidazaga ta'sir etishi ma'lum va shu xususiyati tufayli qandli diabetda qo'llanilishi mumkin[9]. Bu flavonoid boshqa flavonoidlar bilan taqqoslanganda qandli diabetlarda glyukozaga tolerantlikni oshirishi, FBG va lipidlar miqdorini kamaytirishi isbotlangan. Rutinni ta'siri glibenklamid bilan taqqoslanganda diabet bilan kasallangan kalamushlarda glyukoza miqdorini pasaytirishini aniqlashgan[10]. Shrinivasan va boshq. lar streptozototsin bilan qandli diabet chaqirilgan kalamushlarda rutinni muntazam qabul qilish orqali 30-40% giperglikemiyaning oldini olinganini ko'rsatishgan[11].

Rutin diabetlarda xolesterinni so'rilishini ingibirlaydi. Qandli diabeti bor bemorlarda qonda ZPLP miqdori kutarilib, ZYULP miqdori kamayib ketadi. Ularni statinlar va fibratlar kabi gipolipidemik preparatlar bilan davolash ZPLP miqdorini <70 mg/dl gacha tushurmaydi[12]. O'tkazilgan klinik tajribalar dorivor o'simliklar tarkibida mavjud bo'lgan rutin qonda lipidlar miqdoriga ijobiy ta'sir etishini ko'rsatdi[13;14]. Adabiyotlarda rutin saqlovchi dorivor o'simliklar berilganda qonda ZPLP, ZJPLP va TAG lar miqdorining sezilarli darajada pasayishini alohida ta'kidlangan[15;16;10;18]. Rutin ta'sirida ZYULP miqdorini oshishi ham qator eksperimental va klinik tajribalarda isbotlangan[19;20;21].

Digidrokversetinni 21 kun davomida kalamushlarga berilganda xolesterin miqdorini kamayishi kuzatilgan. Chunki bu flavonoid GMG-KoA reduktaza ingibitori bulib, organizmda xususan jigarda xolesterin sintezini ingibirlaydi. Xolesteringa boy ozuqa bilan boqilgan kalamushlarga digidrokversetin berilganda axlatida xolesterin miqdori oshgani kuzatilgan[23]. AroA-I va ApoB lar ZPLP va ZYULP larning retseptorlariga ligand sifatida ta'sir etadi. ApoB to'qimalarni xolesterin bilan boyitsa, AroA-I esa to'qimalardan jigarga xolesterin tashilishini kuchaytiradi. Digidrokversetin ta'sirida AroA-I miqdori oshib, ApoB miqdori

esa kamayishi kuzatildi. Bu esa digidrokversetina boy o'simliklar bilan ratsionni boyitish orqali giperlipidemiyani oldini olish mumkinligini ko'rsatdi[24].

Digidrokversetin hepatoprotektorlik xususiyatiga ham ega bo'lib, digidrokversetin ta'sirida alaninaminotransferaza va aspartataminotransferazalarning miqdori sezilarli kamaygan. Konkanavalin A (Con A) qabul qilgan kalamushlarda digidrokversetin immunoregulyatorlik funksiyalari tekshirilgan va ijobiy natijalar olingan. Masalan: HepG2 hujayralarida TNF- α /ActD indutsirlagan apoptozdan kaspaza-3, kaspaza-7 va kaspaza-8 aktivligini ingibirlash orqali himoya qilgan. Bundan tashqari digidrokversetin NF-kB/p65ni fosforillanishini kamaytirib, proapoptik faktorlarni ekspressiyasini ingibirlaydi va antiapoptik faktorlardan biri bo'lgan Bcl-2 ni ekspressiyasini kuchaytirgan. Jigarning T- hujayralari CD4 + i CD8 + infiltratsiyasi va yallig'lanish mediatorlari ekspressiyasini kamaytirish orqali jigar hujayralarining immunologik yemirilishlarini kamaytirgan. Digidrokversetin HepG2 hujayralarini TNF- α dan himoyalagan[22].

Lyuteonin LXR α glyukoneogenez fermentlari aktivligini pasaytiradi va glyukozani shlashtirilishini yaxshilaydi. xolesterin-7- α -gidroksilaza, ABCG1 va SRB1 ekspressiyasini kuchaytiradi[25]. Lyuteonin va gall kislotasi og'ir metallar bilan zaharlanishni oldini oladi. Masalan ayrim kosmetik vositalar va lak-bo'yoqlar tarkibida qo'rg'oshin bulib, uning organizmga tushishi salbiy oqibatlarga olib kelishi mumkin[26]. Ayrim soha vakillari tomonidan kobalt saqlovchi ozuqa va ichimliklarni iste'mol qilish, sportchilar tomonidan taqiqlangan doping qabul qilish va ortopedik protezlar orqali kobalt organizmga tushishi mumkin. Bu esa kognitiv funksiyalar va kordinatsiyaning buzilishi hamda depressiyaga olib kelishi mumkin[27].

Adabiyotlar tahlilidan ko'rinib turibdiki, flavonoidlar qon-tomir kasalliklarida gipolipidemik ta'sir ko'rsatadi, qandli diabetda esa glyukoneogenezni ingibirlaydi hamda glyukozani hujayralarga o'tishini yaxshilaydi. Undan tashqari hepatoprotektor, immunoregulyatorlik funksiyalari mavjud.

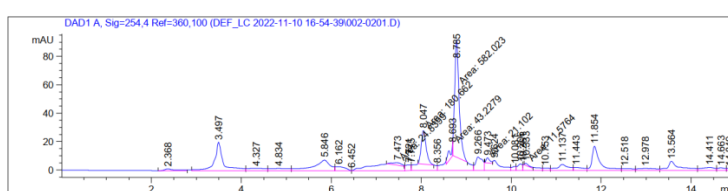
Tadqiqotning maqsadi. Dalachoy tarkibidagi flavonoidlarni suyuqlik xromatografiyasi usuli yordamida aniqlash.

Tadqiqot metodologiyasi. Namuna tarkibidagi flavonoidlarni suyuqlik xromatografiyasi usuli yordamida aniqlandi. Namunadan 5-10 gr miqdorida analitik tarozida tortib olinib, 300 ml hajmdagi yassi kolbaga solinadi. Ustiga 50 ml 70% li etanol eritmasidan qo'shildi. Aralashma magnit aralashtirgich, teskari sovutkich bilan jihozlanib, 1 soat davomida intensiv aralashtirib turgan holda 70-800S qaynatildi va keyinchalik 2 soat davomida xona haroratida aralashtirildi. Aralashma tindirilib filtrlab olindi. Qolgan qismiga 25 ml 70 % etanoldan solib 2 marta qayta ekstraksiya qilinadi. Filtratlar birlashtiriladi va 100 ml o'lchagich kolbaga solinib chizig'igacha 70% etanol bilan to'ldirildi. Hosil bo'lgan eritma sentrafugada 6000-8000 oborot/minut tezlikda 20-30 daqiqa davomida aylantiriladi. Hosil bo'lgan eritma ustki qismidan analiz uchun olindi.

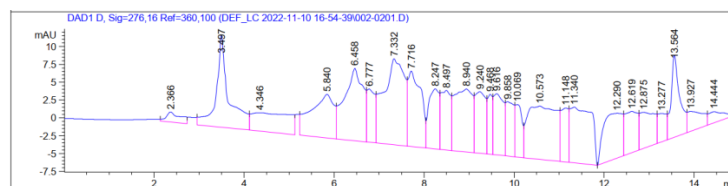
Adabiyotlarda Flavonoidlarni YUSSX bilan aniqlashda elyuent sifatida fosforli, atsetatli bufer sistemalari va atsetonitrildan foydalanilgan. Biz fosfatli bufer sistemasi hamda atsetonitrildan foydalandik.

VEJX «Agilent-1200» markali Kolonka Agilent C18 5mkm, 4,6x250mm. Elyuirovalanish izokratik rejimda o'tkazildi, Mobil faza sifatida),1%li ortofosfat kislotasi va atsetonitril smesi 70:30 nisbatda ishlatildi. Elyuent potogi obyemli tezligi– 1,0 ml/min, kiritilgan namuna hajmi 10mkl. Uzunligi 254 nm.

Xromatografga dastlab, ishchi standart eritmalar, keyinchalik tayyorlangan ishchi eritmalar kiritildi.



Dalachoy standart eritmasi xromatogrammasi



Dalachoy ishchi eritmasi xromatogrammasi

Dalachoy o'simligi tarkibidagi flavonoidlar.

	Dalachoy
	Konsentratsiya mg/gr
Digidrokversetin	5,36
Lyutionin	0,51
Rutin	2,31
Kversetin	9,21
Gall kislotasi	0,016

Dalachoy o'simligi tarkibi yuqori samarali suyuqlik xromatografiyasida o'rganilganda, flavonoidlardan digidrokversetin, lyutionin, rutin, kversetin va gall kislotasi aniqlandi. Dalachoy tarkibida flavonoidlardan kversetin miqdori nisbatan ko'pligini ko'rdik. Digidrokversetin 5,36 mg/gr, lyutionin 0,51mg/gr, rutin 2,31mg/gr, kversetin 9,21 mg/gr ni tashkil qilishi aniqlandi.

Xulosa. Dalachoy o'simligi tarkibi o'rganilganda flavonoidlarga boy ekani aniqlandi. Shuning uchun ham dalachoy o'simligidan foydalanib, sintetik preparatlardan farqli ravishda yon ta'sirlari kam yangi oziq-ovqat qo'shilmasini yaratish va qandli diabet hamda yurak-qon tomir kasalliklarida qo'llash maqsadga muvofiq degan xulosaga keldik.

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