QIZILMIYA O‘SIMLIGINING KORONAVIRUS (COVID-19) POTENSIAL DAVOLASHDA AHAMIYATI

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ANNOTATSIYA

2019-yil oxirida olimlar Xitoyning Uxan shahrida insonlarning nafas olish qiyinlishuvi bilan bog‘liq isitma holatlari sonining ko‘payishiga sabab bo‘lgan Koronavirusning yangi turini aniqladilar. Koronaviruslar avlodi birinchi marta 1966 yilda Tyrell va Bynoe tomonidan aniqlangan bo‘lib, shamollash bilan og‘rigan bemorlardan olingan tashxislardan aniqlashgan. Koronavirus kasalligi (COVID-19) pandemiyasining global tarqalishiga qarshi kurash, pandemiya boshida aniq o‘ziga xos davolash usullari hamda vaksinalarning yo‘qligi sababli qiyin bo‘ldi. Biroq, COVID-19 ning oldini olish uchun faol immunizatsiya sifatida butun dunyo bo‘ylab COVID-19 ga qarshi vaksinalarining joriy etilishi bilan vaziyat yaxshilandi. Bugungi kunga qadar yangi turdagi koronavirus infeksiyasi tufayli 6 043 918 kishi hayotdan ko‘z yumdi. (2022-yil 10-mart holatiga ko‘ra). Xitoyda kasallik avj olgan paytda keng tarqalgan an’anaviy xitoy tabobatining (TCM) qimmatbaho dorivor o‘simligi bo‘lgan qizilmiya o‘simligi bilan o‘tkazilgan sinovlari COVID-19 bemorlari salomatligini yaxshilashda samaradorligini ko‘rsatdi. Bundan tashqari, kasallik asosan nafas olish tomchilari va kontakt orqali yuqadi. 14 nafar tibbiyot xodimi o‘rtasida yuqtirilgan infeksiyalar kasallikning yuqori darajada yuqumli ekanligini tasdiqladi va ba’zi odamlar virusni “super tarqatuvchi” bo‘lishi mumkinligidan xavotir uyg‘otdi. COVID-19 uchun potensial terapiya maqsadlarini asosan 2 qismga bo‘lish mumkin; 1) insonning tug‘ma immun tizimi; va 2) virus RNK sintezini, virus replikatsiyasini, inson hujayra retseptorlari bilan bog‘lanishini blokirovka qilish orqali koronavirus xavfini oldini olish. COVID-19 bilan kasallangan bemorlarda “sitokinin bo‘roni” deb ataladigan haddan tashqari yallig‘lanish reaksiyasi paydo bo‘lishi ko‘rsatilgan. Xitoyning Pinyin tilida Gancao nomi bilan tanilgan qizilmiya, epidemik kasalliklarni davolash uchun an’anaviy xitoy tibbiyoti retseptlarida eng ko‘p ishlatiladigan ingredientlardan biri sifatida tanilgan. Qizig‘i shundaki, qizilmiya oziq-ovqat tarkibiy

qismi hisoblanadi, bu yerda u odatda G‘arb shirinliklarida ishlatiladi. Bugungi kunga qadar qizilmiya va uning COVID-19 uchun qo‘llanganda foydali xususiyatlari haqida to‘liq ma’lumotlar yo‘q. Shuning uchun, ushbu maqolada qizilmiyaning foydali xususiyatlari, ta’sir qilish mexanizmi, xavfsizligi va pandemiya davrida uni qo‘llash uchun ma’lumotlar yig‘ish maqsadida o‘rganildi. Qizilmiya immunitet tizimini faollashtirish uchun limfotsitlar va makrofaglarning rivojlanishiga va farqlanishiga yordam berishi ma’lum.

Kalit so‘zlar: Pandemiya, vaksinatsiya, qizilmiya, COVID-19, SARS-CoV-2, Glycyrrhizae, antiviral

1. KIRISH

2019-yil oxirida olimlar Xitoyning Uxan shahrida insonlarning nafas olish qiyinlishuvi bilan bog‘liq isitma holatlari sonining ko‘payishiga sabab bo‘lgan Koronavirusning yangi turini aniqladilar. Keyinchalik bu virus SARS-CoV-2 deb ataldi va u keltirib chiqaradigan patologiya esa COVID-19 deb nomlandi. Oylar davomida, butun dunyo bo‘ylab infeksiyaning tarqalishi bilan bir qatorda, ushbu patologiya va uning qo‘zg‘atuvchisi bilan bog‘liq bilimlarning progressiv o‘sishi kuzatildi, ammo ko‘p jihatlar, ayniqsa ona-homila-neonatalda kasallikni o‘tishi va xavfi aniqlanishi muhim masala deb qaraldi. COVID-19 pandemiyasining paydo bo‘lishi SARS-CoV-2 virusini SARS-CoV kabi butunlay yo‘q qilish mumkinmi yoki u boshqa odam yuqtirgan koronaviruslar kabi inson populyatsiyasida mavsumiy epidemiyaga aylanib qolishi mumkinligidan qat’iy nazar, insoniyat tarixidagi muhim voqeadir.

COVID-19 immunitetni tartibga solishga jiddiy ta’sir ko‘rsatishi mumkin, chunki u bir nechta organlarni, xususan markaziy asab tizimini faoliyatini ta’sir qilishi aniqlandi. 2020-yil 30-yanvarda JSST yangi koronavirusning tarqalishini xalqaro ahamiyatga molik oltinchi favqulodda holat deb e’lon qildi, bungacha esa H1N1 (2009), poliomielit (2014), G‘arbiy Afrikadagi Ebola (2014), zika (2016) va Kongo Demokratik Respublikasida Ebola (2019) kabi kasalliklar tez fursatlarda tarqalishi va favqulotda holat deb e’tirof etilgan. SARS-CoV-2 dunyoning deyarli barcha mamlakatlarida millionlab odamlarni kasallantirgani va yuz minglab odamlarning o‘limiga sabab bo‘lganini hisobga olib, COVID-19 pandemiyasi barcha tadqiqot sohalaridagi butun ilmiy hamjamiyatni hushyorlikka chaqirdi. Birinchidan, og‘ir o‘tkir respirator sindromli koronavirus (SARS-CoV), B beta-CoV nasli 2002–2003 yillarda yara va palma sivetidan paydo bo‘lib, 8000 dan ortiq odam yuqtirgan va 800 ga yaqin o‘limga sabab bo‘lgan. Endi SARS-CoV-2 butun dunyo bo‘ylab tarqaldi va 2019-yilgi yuqumli koronavirus kasalligining (COVID-19) sababi hisoblanadi. Virusning yuqish yo‘li infeksiyalangan tomchilar bilan nafas olish yoki ular bilan aloqa qilish orqali

amalga oshadi, inkubatsiya esa davri 2 kundan 14 kungacha ekanligi aniqlandi. 2020 yil yanvar oyida Jahon sog‘liqni saqlash tashkiloti (JSST) rasman COVID-19 pandemiyasini xalqaro ahamiyatga molik favqulodda holat deb e’lon qildi. Xitoy farmakologiyasiga tadqiqotlariga ko‘ra, qizilmiya o‘simligi “Qi” (sog‘liqni saqlash uchun tanadan oqib o‘tadigan hayot energiyasi) ni to‘ldirishi, taloqni tozalashi, isitmani tushirishi, organizmda toksiklik holatini oldini olish, balg‘amni ko‘chishini yengillashtirishi, yo‘tal, spazm va og‘riqni kamaytirishi kuzatilgan. Eksperimental va klinik tadqiqotlardan olingan ma’lumotlar qizilmiya virus va mikroblar hamda yallig‘lanish va yo‘talga qarshi, immunomodulyator sifatida, bundan tashqari ekspektoran ta’sirga ega ekanligini ko‘rsatdi. Shuningdek, qizilmiya o‘simligi gastroprotektiv, gepatoprotektiv, antikonvulsant, antioksidant, antidiabetik, antiastmatik, antiallergik, antispazmotik, qonda xolesterinni kamaytirish kabi ta’sirlar, hamda safro sekretsiyasini oshirish va boshqa farmakologik xususiyatlarga ega.

2. Covid-19 ning kelib chiqishi.

Koronaviruslar avlodi birinchi marta 1966 yilda Tyrell va Bynoe tomonidan aniqlangan bo‘lib, shamollash bilan og‘rigan bemorlardan olingan tashxislardan aniqlashgan. Tyrell va Bynoe ularni koronaviruslar deb atashgan, chunki ular sferik virionlar bo‘lib, yadro qobig‘i va sirt proeksiyalari quyosh koronasiga o‘xshaydi. Kasallik avj olgan paytda virusga qarshi maxsus vaksinalar mavjud bo‘lmaganligi sababli, ko‘plab mamlakatlarda, jumladan Fransiya, Amerika va Xitoyda jamoat xatti-harakatlariga oid qat’iy tartib-qoidalar siyosiy darajada amalga oshirildi. Koronaviruslar Coronaviridae oilasidagi Coronavirinae kenja oilasiga mansub, Nidovirales qatoriga kiradi. Ushbu kichik oila a’zolari genetik jihatdan to‘rtta asosiy avlodga bo‘lingan: Alfakoronavirus, Betakoronavirus, Gammacoronavirus va Deltacoronavirus. Omon qolishimizga tahdid solishi mumkin bo‘lgan har qanday narsadan qo‘rqish inson tabiatidir. Bundan tashqari, barchamizda noma’lum narsadan instinktiv qo‘rquv bor, shuning uchun virusni paydo bo‘lishi, potensial o‘limga olib kelishi mumkin bo‘lgan kasallik bizni qo‘rquv va xavotirga soldi. SARS-CoV-2 Betacoronavirus B nasl-nasabiga mansub ijobiy ma’noga ega, bir zanjirli RNK virusi ekanligi va SARS-CoV virusi bilan chambarchas bog‘liqligi aniqlandi. SARS-Cov-2 ning kelib chiqishi hali ham qizg‘in muhokama qilinmoqda, chunki u ilmiy farazlardan tashqari geosiyosiy qarama-qarshiliklar va fitna nazariyalari uchun asos yaratadi degan tushunchalar ham yo‘q emas edi. Virusning to‘liq uzunlikdagi genom ketma-ketliklari olindi va SARS-CoV-2 genomi SARS-CoV bilan 79,6% ketma-ketlik o‘xshashligini ko‘rsatdi. SARS-CoV-2 ning global tarqalishida bir nechta mamlakatlar infeksiyaning tahminiy manbasini aniqlash mumkin bo‘lmagan ko‘plab holatlar haqida xabar berishdi. Qo‘shma Shtatlarda birinchi tasdiqlangan COVID-19 holati Xitoyning Uxan shahriga borgan, ammo u dengiz mahsulotlari bozoriga yoki sog‘liqni saqlash

muassasalariga bormaganligi va Uxanda bo‘lganida kasal odamlar bilan hech qanday aloqada bo‘lmagani haqida xabar bergan bemor edi. Keksa, o‘rta yosh va bolalarda kasallikning kamayish ehtimoli yuqori ekanligi va statistika keksa yoshli insonlarda o‘lim bilan tugayotganligi haqidagi xabarlar tarqalgach, keksalar o‘zlarini yanada yolg‘iz his qilishdi. Umuman olganda, yuqumli kasallikning paydo bo‘lishi uchta muhim elementni o‘z ichiga oladi: yuqumli manba, tarqalish yo‘li va sezgir populyatsiya. Kasallikning inkubatsiya davri 1-14 kun, odatda 3-7 kun va hatto 24 kunga yetishi mumkin, bu esa infeksiyalarni tekshirishni qiyinlashtiradi. Bundan tashqari, kasallik asosan nafas olish tomchilari va kontakt orqali yuqadi. 14 nafar tibbiyot xodimi o‘rtasida yuqtirilgan infeksiyalar kasallikning yuqori darajada yuqumli ekanligini tasdiqladi va ba’zi odamlar virusni “super tarqatuvchi” bo‘lishi mumkinligidan xavotir tushdi.

SARS-CoV-2 SARS-CoV-ga o‘xshash koronavirusni laboratoriya manipulyatsiyasi orqali paydo bo‘lishi ehtimoldan yiroq emas. Yuqorida ta’kidlanganidek, SARS-CoV-2 ning RBD si oldindan bashorat qilinganidan farqli samarali yechim bilan inson ACE2 ga ulanish uchun optimallashtirilgan. Bundan tashqari, agar genetik manipulyatsiya qilingan bo‘lsa, beta-koronaviruslar uchun mavjud bo‘lgan bir nechta teskari genetik tizimlardan biri ishlatilgan bo‘lar edi [9].

Xabar qilinishicha, SARS-CoV-2 ko‘rshapalaklardan kelib chiqqan bo‘lib, zoonotik yo‘l bilan sutemizuvchilarning oraliq xo‘jayini pangolinga uzatiladi; ammo, uning kelib chiqishi hali ham munozaralarga sabab bo‘lmoqda. SARS-CoV-2 Betacoronavirus jinsining Sarbecovirus kenja turiga mansub. Uning genomi mutatsiyaga uchrab, 3 xil: A, B va C ni hosil qiladi. Bu odamdan odamga havo orqali yuqadigan kasallik. COVID-19 hozirda pandemiya va global sog‘liqni saqlash inqirozidir.

3. SARS-CoV-2 vaksinatsiyasi

2019-yil dekabr oyida Xitoyning Uxan shahrida koronavirus kasalligi (COVID-19) aniqlangan edi. Kasallik yangi koronavirus bilan bog‘liq bo‘lib, u odamlarga yuqadigan ma’lum bo‘lgan ettinchi koronavirusdir. U o‘ta yuqumli bo‘lgani uchun COVID-19 yangi koronavirusining tarqalishini nazorat qilish jamoatchilik tomonidan profilaktik xatti-harakatlarning keng miqyosda qabul qilinishini talab qiladi. SARS-CoV-2 keltirib chiqaradigan kasallik bo‘lgan COVID-19 ga qarshi samarali Vaksinalarning yaratilishi simptomatik va og‘ir COVID-19 ni kamaytirishga qaratilgan keng tarqalgan emlash dasturlarini amalga oshirish imkonini berdi. Bugungi kunga qadar yangi turdagi koronavirus infeksiyasi tufayli 6043918 kishi hayotdan ko‘z yumdi. (2022-yil 10-mart holatiga ko‘ra). Ushbu o‘gir vaziyatdan chiqib ketish uchun butun dunyo olimlari insoniyatga samarali vaksinalarni taqdim etish uchun qo‘llaridan kelganini qildilar. Jahon sog‘liqni saqlash tashkiloti (JSST) tomonidan e’lon qilingan

so‘nggi statistik ma’lumotlarga ko‘ra, 2021-yilning 15-sentabriga qadar butun dunyo bo‘ylab 5634.533.040 doza vaksinalar kiritilgan. Dunyo bo‘ylab 2022-yil yanvar oyi o‘rtalariga kelib SARS-CoV-2 (COVID-19) koronavirusidan 5,5 milliondan ortiq o‘lim qayd etildi [10]. Emlash COVID-19 infeksiyasini yuqtirish ehtimolini kamaytiradi - bu avvalgi COVID-2 infeksiyasidan ko‘ra ko‘proq natija beradi. Bu esa kasallikning jiddiyligini va o‘lim ehtimolini kamaytiradi. Vaksinada ikkilanishning asosiy sabablaridan biri shundaki, emlash odatda individual tanlov sifatida belgilanadi, bunda odamlarning xavfi va foydasi asosiy e’tiborga olinadi. Dastlabki COVID-19 emlash bo‘yicha tadqiqotlar homilador ayollarda o‘tqazish istisno qilindi, bu esa xavfsizlik ma’lumotlarining kamligiga olib keldi. Biroq, Buyuk Britaniyada Vaksina va immunizatsiya bo‘yicha qo‘shma qo‘mita (JCVI) hozirda homilador ayol COVID-19 ga nisbatan zaif bo‘lish mezonlariga javob bersa, u o‘z akusheri bilan emlash imkoniyatlarini o‘rganishni tavsiya qiladi. Yaqinda 39 mamlakatdan sog‘liqni saqlash sohasi bo‘yicha 19 991 talaba va tadqiqotchilarning global tekshiruvi shuni ko‘rsatdiki, ushbu talabalarning 18,9 foizi COVID-19 vaksinalarini olishdan bosh tortgan. Boshqa sohalardagi kollej talabalari bilan solishtirganda, sog‘liqni saqlash sohasi talabalari COVID-19 emlash darajasi yuqori bo‘lishi mumkin (masalan, ustuvor guruh bo‘lganligi, vaksinalar haqida tushunchaga ega ekanligi yoki tibbiyot va sog‘liqni saqlash fanlari haqidagi bilimlari tufayli). Tibbiyot xodimlarining ma’lumotlariga ko‘ra, bir nechta tadqiqotlar gemodializ bilan og‘rigan bemorlarda BNT162b2 vaksinasiga nisbatan mRNK-1273 vaksinasining (Moderna) sezilarli darajada yaxshi immunogenligi haqida xabar berdi. Misol tariqasida, geometrik o‘rtacha antikor titrlari sezilarli darajada kattaroq edi va bemorlarning katta qismi BNT162b2 vaksinasiga (221 BAU) nisbatan mRNA-1273 vaksinasi (573 BAU / ml va 53,6%) bilan 590 BAU / ml chegarasiga erishdi) birinchi dozadan 8-9 hafta o‘tgach tahlillar aniqlandi.

4. COVID-19 ni davolashda dorivor o‘simliklardan foydalanishning potensial mexanizmlari.

COVID-19 uchun potensial terapiya maqsadlarini asosan 2 qismga bo‘lish mumkin; 1) insonning tug‘ma immun tizimi; va 2) virus RNK sintezini, virus replikatsiyasini, inson hujayra retseptorlari bilan bog‘lanishini blokirovka qilish orqali koronavirus xavfini oldini olish. Og‘ir o‘tkir respiratorli koronavirus (SARS-CoV-2) bo‘yicha tadqiqotlar cheklangan va davom etayotganligini hisobga olsak, SARS-CoV-1 tadqiqotlar natijalari - inson SARS-CoV-1 va SARS-CoV-2 o‘rtasidagi 80% genom ketma-ketligi o‘xshashligi tufayli o‘rganishga asos bo‘lib xizmat qilishi mumkin.

4.1. Antiviral xususiyati

SARS-CoV-2 ni nishonga olish uchun faol tarkibiy qism angiotensinga aylantiruvchi ferment 2 (ACE2) ga, spike (S) oqsillari orqali virus kirib kelishining oldini olish va 3C-ga o‘xshash proteazni blokirovka qilish uchun ta’sir qilishi kutilmoqda. Chjan va uning hamkasblari tomonidan olib borilgan skrining shuni

ko‘rsatdiki, qizilmiyada 3C-ga o‘xshash proteaza, Mpro va S oqsillarini ingibirlash orqali SARS-CoV-2 ga qarshi og‘iz orqali qabul qiliNAdigan 3 ta biologik virusga qarshi tabiiy komponentlar mavjud [23, 65]. S oqsillariga kelsak, SARS-CoV-2 ning xo‘jayin hujayralariga kirishi, transkripsiyasi va replikatsiyasi uchun 3C-ga o‘xshash proteaza talab qilinadi [65]. 3C-ga o‘xshash proteazni ingibirlashning mumkin bo‘lgan mexanizmi PIK3CG va E2F1 ni PI3K-Akt signalizatsiya yo‘li orqali nishonga olishi mumkin. Boshqa bir in-silico tadqiqotida flavon va kumarin hosilalari ham 3C-ga o‘xshash proteazni kuchli ingibirlashini ko‘rsatdi. Birinchi uchtalik orasida, Rutin aminokislota qoldiqlari Leu141, Ser144, His163 va Asp187 bilan o‘zaro ta’sir qilish orqali SARS-CoV-2 asosiy proteazasiga kuchli bog‘lanishi ko‘rsatilgan. CoV-2 va ACE2 virusli infektsiyani ingibirlash 3C-ga o‘xshash proteazani ingibirlashi ma’lum bo‘lgan bir qancha zamonaviy dorilar bilan solishtirilgan. Ushbu jarayonlarda ishtirok etadigan yo‘llar JAK-STAT va PI3K-Akt signalizatsiya yo‘llarini o‘zichiga oladi.

Qizilmiya ekstrakti DNK va RNK viruslariga qarshi (GR va GK bo‘yicha)
1-jadval

Virus oilasi	Virus	Metod	Birikma	Ta’sir etish konsentratsiyasi	Ta’sirlari	Adabiyotlar
Coronaviridae	SARS COVID19	In vitro Vero cells	GR	0.3–4 mg/mL	Virus replikatsiyasini ingibirlash,	[68-69]
		Vero cellsfRhK-4 cells	GR	0.1 mg/mL > 0.4 mg/mL	Viruslar o‘sishini ingibirlash	
	Parranda bronxit infeksiyasi	In vitro Vero cells	GR	0.08–0.6 mg/mL	Viruslar o‘sishini ingibirlash	[68-77]
Flaviviridae	G‘arbiy Nil	In vitro Vero cells	GR	0.2 mg/mL	Virus replikatsiyasini ingibirlash	[76]
	Yapon ensefaliti	In vitro PS cells	GK	1–2 mg/mL	Virus replikatsiyasiniva o‘sishini ingibirlash	[26]
		Vero cells	GR	0.38 mg/mL	Virus replikatsiyasini ingibirlash	
	Denga	In vitro Vero cells	GK	0.01–0.1 mg/mL	Virus replikatsiyasini ingibirlash	[76]
		Vero cells	GK	0.1–0.6 mg/mL	Infeksiyani kamaytirish	
	Sariq isitma	In vitro Vero cells	GR	0.45 mg/mL	Virus replikatsiyasini ingibirlash	[76]
Arteriviridaein	Cho‘chqa reproduktiv va nafas olish sindromi	In vitro MARC-145 cells	GR	0.5–0.7 mg/mL	Virusning kirib borishini va tarqalishi kamaytirish	[78]
Hepadnaviridae	Gepatit A	In vitro PLC/PRF/5 cells	GR	0.25–2 mg/mL	Antigen expressiyasini va virusli infeksiya kamaytirish	[71–72]
	Gepatit B	In vitro Rat hepatocytes	GR	0.08 mg/mL	Transaminazalarni ingibirlash	[74]
		PLC/PRF/5 cells	GR	Aniqlanmagan	Antigenni bostirish	[74]
		PLC/PRF/5 cells	GR	1–2.5 mg/mL	Anitigen bostirish	[73]
			GK	0.5 mg/mL		
		In vivo Guinea pigs	GR	3 or 67 mg/kg b.w. i.v	antigenini bostirish, transaminazalarning kamaytirish	[75]

Izoh: GR - Glitsirrizin birikmasi, GK – Glitsirrizinik kislota

Ma’lumki, qizilmiya turli viruslar, jumladan gepatit B, gepatit C, gripp, H1N1 va OIVning ko‘payishini ingibirlaydi, buni Zhong va boshqalar tomonidan o‘rganilgan. Bundan tashqari qizilmiya o‘simligi SARS-CoV2 virusining replikatsiyasi, adsorbsiyasi va kirib kelishini ingibirlashi, glitsirrizin birikmasi tufayli virusga qarshi faollikni namoyon etishi haqida ijobiy dalillar mavjud ammo, aniq batafsil mexanizmi hali ham noaniqligicha qolmoqda. Taxminlarga ko‘ra, glitsirrizin birikmasi tarmoqli signalizatsiya yo‘llariga ta’sir ko‘rsatish va azot oksidi sintezini oshirish orqali kuzatilgan ta’sirlar uchun javobgardir. Kichik molekulalarning koronavirusga potensial ta’sirini aniqlash bo‘yicha batafsilroq tadqiqotlar glitsirrizin hosilalarini SARS-CoV2 ga qarshi faollik ko‘rsatishini isbotladi.

1.1. Yallig‘lanishga qarshi vosita

COVID-19 bilan kasallangan bemorlarda “sitokinin bo‘roni” deb ataladigan haddan tashqari yallig‘lanish reaksiyasi paydo bo‘lishi ko‘rsatilgan. Ko‘p miqdorda sitokininlar bilan immunitetning haddan tashqari faollashishi yurak, o‘pka va buyraklar kabi muhim organlarga zarar yetkazishi mumkin. Shunday qilib, yallig‘lanish bilan bog‘liq genlarni ingibirlash, yallig‘lanish omillarini kamaytirish, signalizatsiya yo‘llari va sitokinin muvozanatini tartibga solish sitokinin bo‘ronining oldini olish va COVID-19 tasirini yanada yomonlashtirish uchun muhim ahamiyatga ega. Yallig‘lanishga qarshi ta’sirlar makrofaglardan IL-6 ning chiqarilishini sezilarli darajada kamaytirish, Toll ga o‘xshash retseptorlar yo‘llari orqali glitsirrizin kislota tomonidan paydo bo‘ladi, bu esa sitokinin bo‘ronining induksiyasini kamaytiradi. Bundan tashqari, glitsirrizin kislota TNF va IL-17 signalini o‘zgartirishi mumkin va ular COVID-19 ga qarshi kurashish yo‘li bilan bog‘liq. Formononetin o‘zining yallig‘lanishga qarshi ta’sirini ko‘rsatishi va turli signalizatsiya yo‘llari orqali COVID-19 bemorlarida immunitetni yaxshilashi mumkinligi taxmin qilingan; Toll-like retseptorlari, Fc-epsilon R1, ErbB, MAPK, tabiiy qotil hujayra vositachiligidagi sitotoksiklik, JAK-STAT, komplement va koagulyatsiya kaskadlari va VEGF retseptorlari CASP6, IL6, CCL2, IL-17, C tipidagi leptin retseptorlari va HIF-1 signalizatsiya yo‘llari orqali tasir etadi. Sichqon makrofagi RAW264.7 hujayralarida qizilmiyaning yuqori konsentratsiyasi toksik belgilarsiz konsentratsiyaga bog‘liq holda LPS tomonidan qo‘zg‘atilgan azot oksidi ishlab chiqarishni kuchli ingibirlaydi. Bu xususan, COVID-19 bilan bog‘liq bo‘lgan nafas olish holatida yallig‘lanishning shakllanishini to‘xtatishda cheklovchi ta’sirni anglatishi mumkin. Qizilmiya tarkibidagi glabridin, glycyrrhizic kislota va 18b-glycyrrhetinic kislotasi ham COX-2 genlari, IL, PGE2, TNF-a, ROS, NF-kB, p1101K ning ekspressiyasi va ishlab chiqarilishini ingibirlash orqali yallig‘lanishni bostirishi ko‘rsatilgan.

1.2. Immunomodulyatsiya

Qizilmiya immunitet tizimini faollashtirish uchun limfotsitlar va makrofaglarning rivojlanishiga va farqlanishiga yordam berishi ma’lum. Odamning periferik qon mononuklear hujayralarida fitogemagglutinin keltirib chiqaradigan proliferatsiya qizilmiya tomonidan sezilarli darajada ingibirlangan. Bundan tashqari, yallig‘lanish va astma patogenezida ishtirok etadigan TNF-a, IFN-g va IL-10 ishlab chiqarilishi konsentratsiyaga bog‘liq ravishda bloklangan. G. Glabra ning ekstrakti IFN-g T-hujayralari, IFN-g, IFN-g-induktsiyalangan oqsil, azot oksidi ishlab chiqarish va hujayra ekspressiyasi sonini kamaytirish orqali IFN-g bilan bog‘liq autoimmun javoblarni modulyatsiya qila olishi ko‘rsatilgan. Biroq, boshqa bir tadqiqot OVA tomonidan qo‘zg‘atilgan eozinofillar sonini ingibirlash, tartibga soluvchi T-hujayralarni kuchaytirish va IL-4, IL-5 va kamayishi bilan bir qatorda IFN-g darajalarining ortishi bilan qarama-qarshi ta’sir ko‘rsatdi [40]. IL-13 izolikviritigenin va narigenin tartibga soluvchi T hujayralari induksiyasini rag‘batlantirdi va yallig‘lanishni bostirish uchun mos ravishda AKT-mTOR signalizatsiya ingibitori va AhR signalizatsiya faollashuvi orqali in vitro va in vivo funksiyasini bajaradi. G. glabradan olingan polisaxaridlarning etanol ekstrakti qon zardobidagi IgA, IgG va IgM darajasini oshirish hamda taloq limfotsitlari proliferatsiyasini oshirish orqali immunitet tizimini mustahkamlashi isbotlangan.

1.3. Antioksidant, yo‘talga qarshi va ekspektoran faoliyati

An’anaviy ravishda qizilmiya bronxit, faringit, laringit va bronxial astmani davolashda ishlatilgan. Ayni paytda, COVID-19 bilan kasallangan bemorlarda yo‘tal va nafas qisilishi kabi belgilar namoyon bo‘lishi ma’lum. Shunday qilib, antitussiv, bronko-relaksant va ekspektoran faollik COVID-19 ni davolashda ushbu simptomlarni yengillashtirishi mumkin. Yallig‘lanishning kuchayishiga olib keladigan bir nechta signal yo‘llarini qo‘zg‘atishi mumkin bo‘lgan oksidlovchi stress ko‘p tizimli kasalliklarning rivojlanishiga olib keladi. Glycyrrhiza glabradan olingan polisaxaridlarning etanol ekstrakti sichqonlarda qonning SOD, CAT, GSH-Px va TAOC faolligini oshirish orqali antioksidant ta’sir ko‘rsatishi aniqlangan. DEAE-52 va Sephadex G-100 xromatografiya va G. glabraning etanolik ekstrakti yordamida Glycyrrhiza uralensisdan ajratilgan suvda eruvchan polisaxaridlar ajratib olingan. Bundan tashqari, Radix Likorizaning suvli ekstrakti kalamush traxeyasida karbaksol ta’sirida qisqarishning keskin kamayishini ko‘rsatdi, bu esa, ehtimol, kuchlanish bilan bog‘langan kalsiy ion kanallarini to‘sib qo‘yish orqali bronxning bo‘shashishiga olib keldi. Qizilmiyaning tarkibiy qismlari masalan, likviritin apiosidi va likviritinga qarshi kuchli ta’sir ko‘rsatadi. Ekspektoran faollik 34 - 50 mg/kg dozada bu birikmalar yo‘tal sonini 30 – 78 % ga sezilarli darajada kamaytiradi, ehtimol periferik ATPga sezgir

kaliy ion kanalini modulyatsiya qilish va 5-HT retseptorlari mexanizmlarini markaziy faollashtirish orqali, boshqa tomondan, likuritin apiozidi va likviritin kabi birikmalar ekspektoran faolligini 2,5 baravargacha oshirdi.

1.4. Salbiy ta’sirlar

Qizilmiya o‘zining LD50 qiymatiga ko‘ra o‘rtacha zaharli deb tasniflanadi va uning toksiklik xavfi og‘iz orqali yuborilganda past bo‘ladi. Qizilmiya uchun qayd etilgan asosiy nojo‘ya ta’sirlar gipertoniya, suyuqlikni ushlab turish va gipokaliemiyadan kelib chiqqan ikkilamchi kasalliklarni o‘z ichiga oladi. Mineralokortikoidga o‘xshash faollik qizilmiyaning faol metabolitlari, glitsirrizin kislotasi tomonidan 11-b-HSD 2-turdagi fermentlarini ingibirlash bilan bog‘liq. Bu kortizol darajasining oshishiga olib keladi va kortizolning kortizonga aylanishi bloklanadi. Bundan tashqari, glitsirrizinik kislota jigarda aldosteron metabolizmini bostiradigan 5-b reduktaza faolligini ingibirlaydi, surunkali, kardiomiopatiya, o‘pka shishi, mioglobinuriya, miyopatiya, spazmlar, ichak tutilishlar va rabdomiyoliz bilan bog‘liq. Shunday qilib, 40 yosh va undan katta yoshdagilar, yurak xastaligi bilan og‘rigan odamlar yoki yurak aritmiyasiga ko‘proq moyil bo‘lganlar uchun qizilmiyani ortiqcha iste’mol qilishdan saqlanish tavsiya etiladi. ACE ingibitorlari, qabul qiladigan bemorlar qizilmiyani iste’mol qilishni minimallashtirishlari yoki undan voz kechishlari kerak, chunki bu dorilar va qizilmiya gipokaliemiyaga olib kelishi mumkin bo‘lgan kaliyni kamaytiradigan ta’sirga ega. Varfarin yoki digoksinni qabul qiladigan bemorlar zaharlanishni oldini olish uchun qizilmiya mahsulotlarini iste’mol qilishdan butunlay voz kechishlari kerak. Homiladorlik vaqtida va yangi tug‘ilgan chaqaloqlarda qizilmiyadan foydalanish ehtiyot bo‘lishi kerak, chunki ba’zi klinik tadqiqotlar homiladorlik davrida qo‘llanilganda tug‘ilgan bolalarda homiladorlik yoshining pasayishi, erta tug‘ilish va gipotalamus-gipofiz-adrenokortikal o‘qning funksiyalari va kognitiv o‘zgarishlarni ko‘rsatdi. Biroq, qizilmiya o‘z ichiga olgan TCM COVID-19 bemorlariga berilganda, noxush holatlar haqida hozirgacha malumotlar mavjud emas. Hozirgi vaqtda qizilmiyani COVID-19 bilan kasallangan bemorlarga antiviral preparatlar bilan integral davolash sifatida berish tavsiya etiladi. TCM va GRning COVID-19 ni davolashda imkoniyatlarini o‘rganish uchun keyingi klinik sinovlar talab qilinadi va davom etmoqda.

XULOSA

COVID-19 kelib chiqishi haqidagi turli xil farazlar mavjud bo‘lib, hozirgi kunda virusning o‘chog‘i deb Uxan shahri hisoblanadi. Koronovirus yangi shtammi bo‘yicha to‘liq davolovchi vaksina yaratilmagani uchun vaksinatsiya jarayoni ancha sust ekanligi va bu tadqiqotlarni ancha sekinlashishiga olib kelmoqda. Vaksinalar har doim

ham maqullanmayapti, sababi turli xil davlatlarda COVID-19 ning yangi shtammlari qayd etilayotgani ma'lum bo'lmoqda. Aksariyat shifokorlar TCM dan foydalanishga shubha bilan qarashsa-da, ayniqsa, COVID-19 uchun samarali davolash choralari mavjud bo'lmaganligi tufayli, xalq tabobatini rad etmaslik kerak. TCM da qizilmiya qabul qilinganda, COVID-19 bemorlari uchun virusga hamda, yallig'lanishga qarshi, immunomodulyatsiya va boshqa ta'sir etish potensialini ko'rsatdi. Qizilmiyani haddan tashqari iste'mol qilish gipertenziya, gipokalemiyani qo'zg'atishi mumkin, ammo hozirgi kunga qadar hech qanday jiddiy nojo'ya hodisa qayd etilmagan. Qizilmiyaning bu xususiyati, COVID-19 bemorlarida qizilmiya bilan davolash samaradorligi va xavfsizligini to'liq baholash uchun keyingi tadqiqotlarni ishlab chiqishda qo'llanma sifatida foydalanish mumkin.

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