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AJUGA TURKISTANICA O‘SIMLIGI BARG VA POYA QISMLARIDAN SPIRTLII EKSTRAKT OLIISH JARAYONINING TEXNOLOGIK TAHLILI

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Annotatsiya. Mazkur maqolada *Ajuga turkistanica* o‘simligining barg va poya qismlaridan biologik faol moddalarni ajratib olish maqsadida spirtli ekstraksiya jarayoni tajribaviy asosda o‘rganildi[1,2]. Quritilgan va maydalangan o‘simlik xom ashyosi 96%li etil spirti, yordamida mazeratsiya usulida ekstraksiya qilindi[3]. Ekstraksiya 7 sutka davomida olib borilib, hosil bo‘lgan ekstrakt filtrlash va rotorli bug‘latgich yordamida quyuqlashtirildi[4]. Olingan natijalar tanlangan texnologik sharoitlar *Ajuga turkistanica* o‘simligidan biofaol birikmalarni samarali ajratib olish imkonini berishini ko‘rsatdi.

Kalit so‘zlar: *Ajuga turkistanica*, dorivor o‘simlik, masseratsiya, spirtli ekstraksiya, etil spirti, rotorli bug‘latgich.

Abstract. In this study, the alcoholic extraction process aimed at isolating biologically active compounds from the leaves and stems of *Ajuga turkistanica* was investigated on an experimental basis [1,2]. The dried and ground plant raw material was extracted by the maceration method using 96% ethanol as a solvent [3]. The extraction process was carried out for 7 days, after which the obtained extract was filtered and concentrated using a rotary evaporator [4]. The results demonstrated that the selected technological conditions allow for the efficient isolation of bioactive compounds from *Ajuga turkistanica*.

Keywords: *Ajuga turkistanica*, medicinal plant, maceration, alcoholic extraction, ethanol, rotary evaporator.

Аннотация. В данной работе экспериментально изучен процесс спиртовой экстракции с целью выделения биологически активных веществ из листьев и стеблей растения *Ajuga turkistanica* [1,2]. Высушенное и измельчённое растительное сырьё подвергали экстракции методом мацерации с использованием 96%-ного этилового спирта в качестве растворителя [3]. Экстракцию проводили в течение 7 суток, после чего полученный экстракт фильтровали и упаривали с применением роторного испарителя [4].

Полученные результаты показали, что выбранные технологические условия обеспечивают эффективное выделение биологически активных соединений из *Ajuga turkistanica*.

Ключевые слова: *Ajuga turkistanica*, лекарственное растение, мацерация, спиртовая экстракция, этиловый спирт, роторный испаритель.

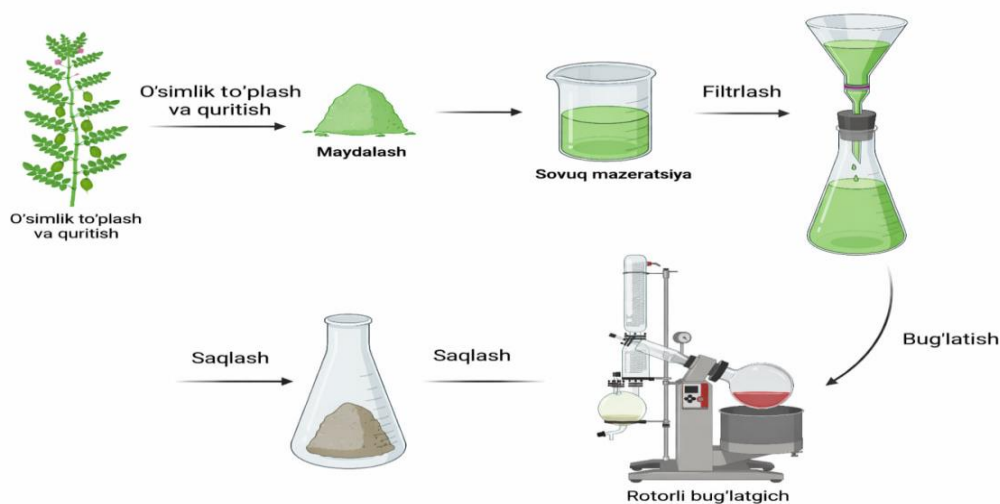
Kirish. Dorivor o‘simliklar tarkibidagi biologik faol moddalar farmatsevtika, biotexnologiya va tibbiyot sohalarida muhim ilmiy-amaliy ahamiyatga ega[5]. *Ajuga turkestanica* — O‘zbekiston respublikasi Surxondaryo viloyatining Boysuntog‘ hududida o‘svuchi endemik dorivor o‘simlik turi hisoblanadi[2]. *Ajuga turkistanica* *Lamiaceae* oilasiga mansub bo‘lib, uning tarkibida fenolik birikmalar, flavonoidlar va diterpenoidlar, sitotoksik, antioksidant va mikroblarga qarshi ta’sirga ega biologik faol komponentlar mavjudligi so‘nggi yillardagi ilmiy tadqiqotlarda qayd etilgan[6,7]. Ushbu maqolada *Ajuga turkistanica* o‘simligidan spirtli ekstrakt olish jarayoni texnologik jihatdan yoritildi[8].

Tadqiqot obyekti va usullari:

Tadqiqot obyekti. Tadqiqot obyekti sifatida *Ajuga turkistanica* o‘simligining barg va poya qismlari tanlab olindi. Xom ashyo tabiiy sharoitda quritilib, doimiy quruq massa holatiga keltirildi.

Ekstraksiya usuli. Quritilgan xom ashyo mexanik usulda yirik dispersli kukun holiga keltirildi. 10 g quruq massa 100 ml 96%li etil spirti bilan ishlov berildi (1:10 nisbatda). Masseratsiya (eritish) jarayoni qorong‘i sharoitda xona haroratida (20–25°C) 7 sutka davomida olib borilib, idish kuniga 1–2 marta chayqatib turildi.

Ekstraktni quyuqlashtirish. Ekstraksiya yakunida eritma filtr qog‘ozi yordamida filtrlab olindi va ajratib olingan filtrat rotorli bug‘latgich uskunasi yordamida (vakuum-siz sharoitda) 120 °C haroratda, 120 rpm tezlikda, 2 soat davomida quyuqlashtirildi(1-rasm). *Ajuga turkistanica*



o‘simligidan spirtli ekstrakt olish sharoitlari quyida keltirilgan(1-jadval).

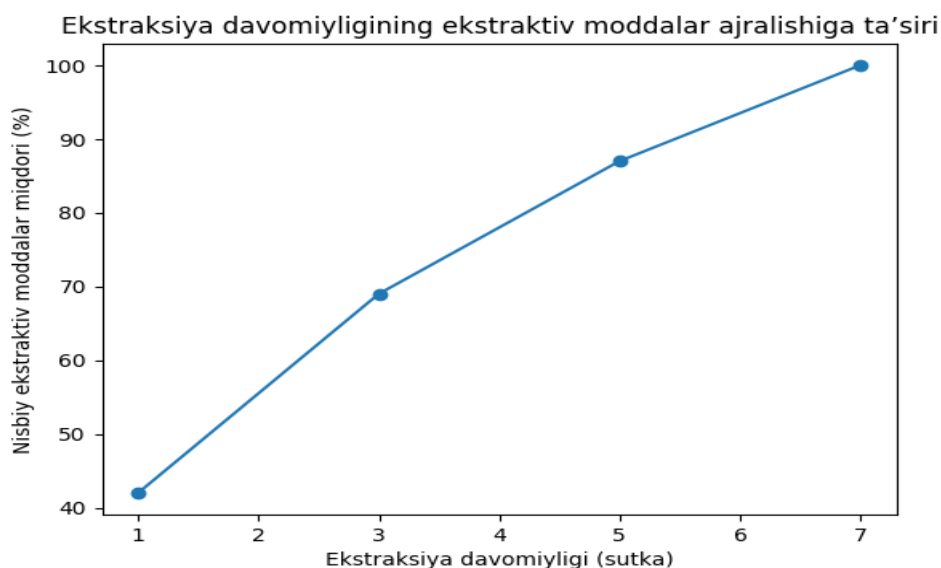
1-rasm. *Ajuga turkistanica* o‘simligidan spirtli ekstrakt olish jarayoni chizmasi.

1-jadval

Ajuga turkistanica o‘simligidan spirtli ekstrakt olish sharoitlari

Ko‘rsatkich	Qiymati
Xom ashyo turi	Barg va poya
Quruq massa	10 g
Erituvchi	96% etil spirti
Erituvchi hajmi	100 ml
Ekstraksiya usuli	Mazeratsiya
Ekstraksiya davomiyligi	7 sutka
Bug‘latish harorati	120 °C
Aylanish tezligi	120 rpm

Tadqiqot natijalari shuni ko‘rsatdiki, 96%li etil spirti *Ajuga turkistanica* o‘simligi tarkibidagi qutbli va yarim qutbli biofaol birikmalarni samarali ajratib olish uchun maqbul erituvchi hisoblanadi[9,10]. Ekstraksiya jarayonining dastlabki kunlarida biofaol moddalar erituvchiga intensiv o‘tadi. 5–7 sutkada ekstraksiya jarayoni nisbatan barqarorlashib, 7-sutkada maksimal ekstraktiv moddalarning ajralishi kuzatildi(2-rasm). Bu holat tanlangan 7 sutkalik



mazeratsiya usulining samaradorligini tasdiqlaydi[11].

2-rasm. Ekstraksiya davomiyligining ekstraktiv moddalar ajralishiga ta’siri.

Grafik *Ajuga turkistanica* o‘simligi barg va poya qismlaridan spirtli ekstraksiya jarayonida 1–7 sutka oralig‘ida ekstraktiv moddalar miqdorining nisbiy o‘zgarishini ko‘rsatadi.

Xulosa. *Ajuga turkistanica* o‘simligining barg va poya qismlaridan spirtli ekstrakt olish texnologiyasi tajribaviy asosda ishlab chiqildi. 7 sutkalik masseratsiya jarayoni biofaol moddalarni samarali ajratib olish uchun optimal deb baholandi[12].

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