

**THE ELEMENT, AMINO- AND FATTY ACIDS COMPOSITION OF *CISTANCHE SALSA*
(OROBANCHACEAE) GROWING IN KAZAKHSTAN**

© Zh. Zh. Karzhaubekova, * N. G. Gemejyeva

Institute of botany and phytointroduction MES RK, Almaty, the Republic of Kazakhstan

*E-mail: zhanna1322@mail.ru

REFERENCES

1. Czerepanov S. K. 1995. Vascular plants of Russia and Adjacent states (The former USSR). Cambridge. 516 p.
2. Dictionary of generic names of seed plants. 1995. New York. 570 p.
3. Flora Kazakhstana 1965. [Flora of Kazakhstan]. Vol. 8. Alma-Ata. 446 p. (In Russian)
4. Abdulina S. A. 1999. Spisok sosudistykh rasteniy Kazakhstana [The list of vascular plants of Kazakhstan]. Almaty. 187 p. (In Russian)
5. Pharmacopoeia of the People's Republic of China. 2005. Beijing. Vol. 1. 791 p., App.
6. Zhang C. Z., Wang S. X., Zhang Y., Chen J. P., Liang X. M. 2005. *In vitro* estrogenic activities of Chinese medicinal plants traditionally used for the management of menopausal symptoms. — J. Ethnopharmacol. 98(3): 295–300.
7. Maruyama S., Hashizume S., Tanji T., Yamada K., Tachibana H. 2008. *Cistanche salsa* extract enhanced antibody production in human lymph node lymphocytes. — Pharmacology online. 2: 341–348.
8. Shimoda H., Tanaka J., Takahara Y., Takemoto K., Shan S.-J., Su M.-H. 2009. The hypocholesterolemic effects of *Cistanche tubulosa* extract, a Chinese traditional crude medicine, in mice. — Am. J. Chin. Med. 37(6): 1125–1138.
9. Sarsenbaev K. N., Baramysova G. T., Dzhienbaev B. Zh., Kozhamzharova L. S., Kolosova N. G., Imanbaeva A. A. 2010. The stolones of *cistanche* is a new source of biological compounds. Report 1. — Khimicheskii zhurnal Kazakhstana. 1: 195–201. (In Russian)
10. Naran R., Ebringerova A., Hromádková Z., Patoprstý V. 1995. Carbohydrate polymers from underground parts of *Cistanche deserticola*. — Phytochemistry. 40(3): 709–715.
11. Deyama T., Kobayashi H., Nishibe S., Tu P. 2006. Isolation, structure elucidation and bioactivities of phenylethanoid glycosides from *Cistanche*, *Forsythia* and *Plantago* plants. — Stud. Nat. Product Chemistry. 33(M): 645–674.
12. Yunusov S. Yu. 1974. Alkaloidy [Alkaloids]. Tashkent. 320 p. (In Russian)
13. Kapsalyamova E. N. 2010. Development of composition and technology of medicinal forms based on polyphenol compounds of *Cistanche salsa* (C. A. Mey.) G. Beck: Avtoref. dis. ... kand. farm. nauk. Almaty. 24 p. (In Russian)

14. Kazbekova A. T., Mukhamedova D. D., Seytembetov T. S., Tuleuov B. I., Musabekova A. S. 2011. Studies of antioxidant and antibacterial properties of *Cistanche salsa* extracts. — Astana meditsinalykh zhurnal. 4(66): 115–118. (In Russian)
15. Kobayashi H., Karasawa H., Miyase T., Fukushima S. 1984. Studies on the constituents of *Cistanche Herba*. II. Isolation and structures of new iridoids cistanin and cistachlorin. — Chem. Pharm. Bull. 32(5): 1729–1734.
16. Karzhaubekova Zh. Zh., Gemejyeva N. G. 2013. Phytochemical studies of plants in genus *cistanche* (*Cistanche hoffmigg. et Link*). — Vestnik KazNU. Seria biol. 3/2(59): 388–391. (In Russian)
17. Gemejyeva N. G., Ermozanova M. K., Arysbaeva R. B. 2013. Revealing features of dissemination of *Cistanche salsa* in South Peri-Balkhash region. — Izvestiya NAN RK. Seria. biol. i med. 1(295): 10–17. (In Russian)
18. Ermozanova M. K., Gemejyeva N. G., Karzhaubekova Zh. Zh. 2013. The floristic composition of plant communities with *Cistanche* in South Balkhash. — Bulletin d'EURO TALENT-FIDJIP. 5: 46–50. (In Russian)
19. Gemejyeva N. G., Ermozanova M. K., Nurkhanov A. 2014. The resource potential of natural *Cistanche* population in South Peri-Balkhash region. In: *Sovremennye tendentsii v izuchenii flory Kazakhstana i ee okhrana* (Baytenovskie chteniya – 3). Material Mezhdunarod. nauch. konf. Almaty. P. 239–244. (In Russian)
20. Gemejyeva N. G., Karzhaubekova Zh. Zh., Ermozanova M. K. 2014. Assessment and monitoring of natural populations of medicinal plant *Cistanche salsa* (C. A. Mey.) G. Beck (Fam. *Orobanchaceae* Vent.) in Kazakhstan. In: 7th Planta Europa conf. «Plants for people, People for Plants». Crete. P. 63–66.
21. Grudzinskaya L. M., Gemejyeva N. G., Nelina N. V., Karzhaubekova Zh. Zh. 2014. Anotirovannyi spisok lekarstvennykh rasteniy Kazakhstana [Annotated list of medicinal plants of Kazakhstan]. Almaty. 200 p. (In Russian)
22. Gemejyeva N. G., Karzhaubekova Zh. Zh. 2015. Life Characteristic of *Cistanche salsa* (C. A. Mey.) G. Beck – Perspective Medicinal Plant of the South Peri-Balkhash Lake Saxaul Forests. — Am. J. Environm. Protect. Special Iss. 4(3–4): 111–116.
23. Kingston G. M., Dzhesi L. B. 1991. Probopodgotovka v mikrovolnovih pechah. Teoria I praktika. [Sample preparation in microwave oven. Theory and practice]. Moscow. P. 210–221.
24. Lamble K. J., Hill S. J. 1998. Microwave digestion procedures for environmental matrices. — Analyst. 123: 103–133.
25. Adams R. 1974. Determination of aminoacids profiles biological samples by gas chromatography. — J. Chromatogr. 95(2): 188–212.
26. Keyts M. 1975. Tehnika lipidologii [Technique of lipidology]. Moscow. 322 p. (In Russian)

27. Goryaev M. I., Evdikova N. A. 1977. Spravochnik po gazozhidkostnoy khromatografii [Handbook of gas-liquid chromatography]. Almaty. 550 p. (In Russian)
28. Du Y., Sheng J.-H., Cui X.-S., Zhai Z.-X., Dong H.-H., Guo Y.-H. 2012. Determination of the content of mineral elements in *Cistanche tubulosa* from different area. — Spectr. Spectr. Anal. 32(10): 2824–2827.
29. Elwakil H. E., Abdelsalam N. R., Abd El-Azeem R. M., Hemeida A. A., Abass N. Y., Nasar A. 2012. Morphological and molecular genetic characterization of holoparasitic plant; *Cistanche phelypeae* L. in Siwa Oasis, Egypt // <http://www.academia.edu/6034293>