



60
years
anniversary

**Acad. S.Yu. Yunusov Institute of the
Chemistry of Plant Substances AS RUz**

**12th International
Symposium on the Chemistry
of Natural Compounds**

ABSTRACTS

September 7-8, 2017
Tashkent, Uzbekistan

POLYSACCHARIDES OF *Scutellaria adenostagia*

A. A. Siddikova, R. K. Rakhmanberdyeva

Acad. S. Yu. Yunusov Institute of Chemistry of Plant Substances,
Academy of Sciences of the Republic of Uzbekistan, e-mail: rkrahman@rambler.ru

Scutellaria L. is a genus of plants of the family *Lamiaceae* includes about 350 species widespread in subtropical and tropical regions, including Europe, North America and East Asia [1, 2]. In Uzbekistan, 32 species of *Scutellaria* L. grow which are used in folk medicine for the treatment of epilepsy, allergy, neurosis, hypertension and other diseases [2, 3].

This work is devoted to the study of the carbohydrate complex of the aerial part of *S. adenostagia* collected in the Namangan region of the Turakurgan region during flowering.

The carbohydrate complex was isolated according to a known method [1]. Isolated alcohol-soluble sugars (ASS), water-soluble polysaccharides (WSPS), pectin substances (PS) and hemicelluloses (HMC). ASS according to PC data consists only of glucose. The monosaccharide composition of the isolated polysaccharides was determined by complete acid hydrolysis followed by GC analysis.

The results of the study showed that in the aerial part of the plant, WSPS (13%) accumulate more and their monosaccharide composition is represented by galactose (14.4%), arabinose (31.0%), glucose (5.6%), mannose (35%), xylose (4.4%) and rhamnose (0.4%).

The WSPS is a light-brown colored amorphous powder completely dissolved in water. A homogeneous polysaccharide-glucoarabinogalactan (GAG) with MM of 15 kDa consisting of glucose (5.6%), arabinose (27.2%) and galactose (55%) was obtained by fractional precipitation of WSPS. In the IR spectrum of GAG, absorption bands characteristic of polysaccharides were observed. It should be noted that in the spectrum there are absorption bands related to acetyl groups ($1742, 1250 \text{ cm}^{-1}$). Therefore, GAG is a naturally acetylated polysaccharide.

PS are a beige powder, soluble in water with the formation of viscous solutions – $\eta_{\text{rel.}}$ 3.12 (c 1%; H_2O), monosaccharide composition of PS includes neutral and acidic monosaccharides.

HMC-brown amorphous powder, completely soluble in alkali, the main monosaccharide is xylose, and also insignificant amounts of glucose and galactose. Consequently, the GMC refers to xylans.

Thus, the presence in the aerial part of *S. adenostagia* of alcohol-soluble sugars, water-soluble polysaccharides, pectin substances and hemicelluloses has been established. The WSPS contains a naturally acetylated glucoarabinogalactan.

REFERENCES

1. Shang X., He X., Li M., Zang R., Fan P., Zhang Q., Jia Z. The genus *Scutellaria* an ethnopharmacological and phytochemical review // *J. Ethnopharmacol.* 2010. Vol. 128. Pp. 279–313.
2. Plant resources of USSR. Flowering plants, their chemical composition, and usage. Family *Hippuridaceae-Lobeliaceae*. Saint-Petersburg, 1991. P. 85–90.
3. Flora of Uzbekistan. Tashkent. 1961. V. 5. P. 270–292.

Nurmuhamedov H. S. – 204
Nurtazina A. N. – 244
Nykmukanova M. M. – 354

O

Obidova N. J. – 326
Ohunov I. I. – 113
Okay Sezer – 353
Okhundedaev B. S. – 159, 174, 179
Okhunov I. I. – 111, 285, 330
Okmanov R. Ya. – 168
Oliftayeva Zh. – 334
Olimov N. K. – 408, 409
Olimova M. I. – 132, 168
Omarova A. T. – 389
Omonova U. T. – 413
Omonturdiyev C. Z. – 19
Onashvili E. O. – 362
Orjonikidze M. K. – 220
Orlov A. V. – 260
Ortikov I. S. – 52
Oshepkova Y. I. – 347, 348
Otaeva Sh. A. – 142
Ozek Gulmira – 104, 105, 279
Ozek Temel – 103, 105, 279

P

Pan L. – 218
Pardaev G. – 164, 169
Patrushev S. S. – 9
Payziev I. B. – 122
Petrova E. N. – 11
Pirmamedova R. P. – 157
Pirnazarova N. B. – 149, 275, 335
Piyakina G. A. – 71, 208, 212
Polovinka M. P. – 369
Polyakov N. E. – 215
Postelnikov S. A. – 89
Pozilov M. K. – 395
Praliyev K. D. – 264
Protopopov A. V. – 217, 364, 365
Pukhov S. A. – 259
Pulatova L. T. – 68, 344

Q

Qin Danfeng – 412

R

Radnaeva L. D. – 45, 96, 97, 98, 99
Rahimov D. A. – 92
Rahimov Sh. – 18
Rahmankulov U. – 375
Rahmatova M. D. – 61
Raimova G. M. – 400
Rakhimov Sh. B. – 129, 140
Rakhimova Sh. Kh. – 160, 169, 173
Rakhmanberdieva R. K. – 66, 119, 269, 277, 321
Rakhmatov Kh. A. – 117, 119, 161, 162
Rakhmatova M. J. – 150
Rakhmatullina A. A. – 234
Rakhmonov B. D. – 150
Ramazanov N. Sh. – 51, 136, 276

Randalova T. E. – 98, 99
Rashidova S. Sh. – 248, 331
Rasulev B. F. – 203
Rasulova Kh. A. – 54, 70, 205, 206, 266
Reheman Ayinuer – 300
Rejepov J. – 63, 83, 281, 283, 284
Ren Lai – 24
Reshetov Y. E. – 355
Riabchenko A. A. – 377
Rocheva T. K. – 12
Rouzi P. – 309, 310, 311, 312, 313, 314, 315
Rouzimat Rushangul – 57, 316
Rozi Parhat – 106
Rustamov M. Q. – 201
Rustamova S. I. – 271, 394

S

Saatov B. T. – 86
Saatov T. S. – 86
Sabir Gulnar – 298
Sabiroy R. Z. – 180, 271, 393, 394, 397
Sabiroya N. N. – 228
Sabitova V. I. – 73
Sadikov A. Z. – 294
Sadikov T. – 143, 145
Sadikov Z. T. – 143, 344
Sadykov A. Z. – 177, 292, 323
Sadyrbayeva F. M. – 264
Safarov E. G. – 391
Sagareishvili T. G. – 359
Sagdiyev N. J. – 337
Sagdullaev B. T. – 77, 135
Sagdullaev Sh. Sh. – 1, 54, 127, 143, 146, 158, 159, 169, 177, 182, 202, 279, 292, 293, 294, 322, 323
Saidkarimova N. B. – 36
Saidkhodzhaeva S. N. – 415
Saidov A. Sh. – 236
Saitmuratova O. Kh. – 337
Salakhutdinov N. F. – 214, 356, 357
Salikhov S. A. – 92
Salikhov Sh. I. – 31, 251
Salikhova G. A. – 39
Salimov B. T. – 80
Salkeyeva L. K. – 342
Salokhutdinova M. K. – 417
Samanbay Ahmatbeck – 299
Samarkhanov T. N. – 108
Sanaev N. N. – 91
Sanoev A. I. – 293
Sanoev Z. I. – 18, 141, 266
Sartakov M. P. – 333
Sarymsakov A. A. – 245, 247, 248, 249
Sasmakov S. A. – 208, 209, 211, 212, 213
Savinova A. O. – 11
Savinova O. V. – 373
Sayitkulov Sh. M. – 235
Seidakhmetova R. B. – 382
Seilkhanov O. T. – 43
Seilkhanov T. M. – 43

Seitimova G. A. – 74, 353
Selyutina O. Yu. – 215
Semakov A. V. – 259
Sen Ali – 349, 350
Serkerov S. V. – 40, 41, 94, 225, 361, 372, 376
Shabanov P. D. – 75, 76
Shablykina O. V. – 377
Shadibekova O. B. – 277
Shaheen F. – 352
Shakhidoatov R. Kh. – 273
Shakhidoatov Kh. M. – 8, 176
Shakirov R. – 114
Shakirzyanova G. S. – 192
Shalashvili K. G. – 359
Sham'yanov I. D. – 67, 125, 158, 159, 161, 162, 175, 179
Shamanov Sh. Kh. – 53
Sharipov A. T. – 325
Sharipova R. R. – 47, 48, 257
Shatar Sanduin – 105
Sherova Z. U. – 265
Shevchenko L. I. – 277
Shevtsova E. F. – 259
Shi Yan-Ping – 10
Shilin S. V. – 377
Shilong Yang – 24
Shirokova E. D. – 357
Shitikova O. V. – 260
Shokol T. V. – 360
Shomirzoeva Omina – 305
Shomuratov Sh. A. – 77, 196
Shukurov A. I. – 245, 247
Shults E. E. – 9, 355
Sidametova Z. – 408
Siddikov D. R. – 117, 279
Siddikova A. A. – 269
Simonyan G. S. – 237
Slobodyanyuk T. N. – 246
Sodik Numonov – 109
Sokhibova N. B. – 64
Soliev A. B. – 416
Soomro Manzoor Hussain – 22
Sotimov G. B. – 122, 332
Spiridonov Yu. Ya. – 215
Stankevich V. K. – 11
Startseva V. A. – 234
Strobykina I. Yu. – 47, 48
Suladze T. Sh. – 219
Sulakvelidze Ts. – 363
Suleimen Ye. M. – 95, 107, 108
Suleymanoglu Mediha – 230
Suleymanov T. A. – 380
Sultankhodjaev M. N. – 282
Sultanova D. A. – 264
Sun J. J. – 88
Sutiashvili M. G. – 359
Suyarov A. A. – 63
Syrov V. N. – 51, 61, 62, 67, 78, 79, 112, 134, 173, 178, 271, 273, 276, 396, 401

T

Tadjibaev M. M. – 242
Tadjimukhamedov Kh. S. – 185
Tagayaliev N. – 184
Takhirov Y. R. – 210