

In an investigation of *Rhodiola semenovii* (Rgl. et Herd) Boriss. (*Sedum semenovii*), family Crassulaceae, collected in July in the Alma-Ata oblast (western Talgar), by paper chromatography in the solvent system 2% acetic acid (system 1) and BAW (40:12:28) (system 2) in the rhizomes of the plant we have found four catechins revealed with a 1% solution of vanillin in concentrated HCl and with a 3% ethanolic solution of p-toluenesulfonic acid. The catechins were separated by partition chromatography on KSK silica gel previously treated as described by Chumbalov and Pashinina [1].

The comminuted rhizomes were extracted with ethanol three times. The ethanolic extract was concentrated in vacuum in a current of nitrogen, the residue was purified with benzene and treated with water, and the catechins were extracted with ethyl acetate. The mixture of substances of the ethyl acetate extract was chromatographed on a column of KSK silica gel (50 mesh) using water as the stationary solvent and ether as the mobile solvent. First a catechin ether (substance (IV)) was isolated, and then two isomeric flavans (substances I and II), and the last fractions of the eluates contained substance (III), which was purified by preparative paper chromatography in system 2.

Substance (I), $C_{15}H_{14}O_6$, mp 178–179°C, $[\alpha]_D^{20} +18.6^\circ$ (c 0.2; acetone–water (1:1)) λ_{\max} 282 nm (log ϵ 3.51), R_f 0.64 (here and below, system 2); acetyl derivative, mp 129–131°C.

Substance (II), $C_{15}H_{14}O_6$, mp 241–243°C, $[\alpha]_D^{20} -68.4^\circ$ (c 0.3; acetone–water (1:1)), λ_{\max} 283 nm (log ϵ 3.28), R_f 0.57; pentaacetate, mp 149–150.5°C.

Substance (III), $C_{15}H_{14}O_7$, mp 215–216°C, $[\alpha]_D^{20} -58.2^\circ$ (c 0.1; methanol), λ_{\max} 272 nm (log ϵ 3.10), R_f 0.42.

Substance (IV), $C_{22}H_{18}O_{10}$, mp 253–255°C, $[\alpha]_D^{21} -176^\circ$ (c 0.15; methanol), λ_{\max} 284 nm (log ϵ 4.05; R_f 0.74; acetyl derivative, mp 116–118°C. Its IR spectrum had the absorption band of an ester bond (1695 cm^{-1}). In the products of enzymatic hydrolysis with tannase, gallic acid and substance (II) were detected by paper chromatography.

On the basis of the results obtained, substances (I–IV) were identified as (+)-catechin, (–)-epicatechin, (–)-epigallocatechin, and (–)-epicatechin gallate, respectively [2, 3].

LITERATURE CITED

1. T. K. Chumbalov and L. T. Pashinina, Uch. Zap. Kaz. Gos. Univ., Khim., 44, 87 (1958).
2. L. T. Pashinina, and T. K. Chumbalov, in: Phenolic Compounds and Their Biological Functions [in Russian], Moscow (1968), p. 40.
3. T. Takemoto and T. Miyase, Yakugaku Zasshi, 95, 180 (1975).

Tomsk Medical Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 4, p. 545, July–August, 1976. Original article submitted March 17, 1976.

This material is protected by copyright registered in the name of Plenum Publishing Corporation, 227 West 17th Street, New York, N.Y. 10011. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, microfilming, recording or otherwise, without written permission of the publisher. A copy of this article is available from the publisher for \$7.50.