

A PHYTOCHEMICAL INVESTIGATION OF
PLANTATION GINSENG

R. G. Ovodova, L. V. Mikheiskaya,
and Yu. S. Ovodov

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We have investigated the roots of ginseng *Panax ginseng* C. A. Mey. grown by P. E. Elizarov in the vil-
lage of Poles'e, Maritime Territory, under conditions as close as possible to the conditions of growth of
wild ginseng. Two seven-year and one nine-year roots were taken. The fresh roots were carefully freed
from soil, washed with cold water, and ground to small pieces. Steeping was carried out by the procedure
developed by P. E. Elizarov and also recommended by folk medicine. The comminuted roots were covered
with 30% aqueous ethanol at the rate of 10 ml of aqueous ethanol per gram of roots and were left for two
weeks in the dark at room temperature (extraction I). The resulting extract was filtered, and the residue
of roots was steeped again in half the amount of 30% ethanol for two weeks in the dark at room temperature
(extraction II). The extract was separated off and the roots, after being dried in the air, were extracted as
a check with 30% ethanol (200 ml) by boiling in a flask under reflux for 8 h (extraction III). Three aliquots
(10 ml each) were taken from each extract and were evaporated and the yield was determined gravimetri-
cally. The combined extracts from each root were used for the qualitative determination of the composi-
tion of the extractive substances by chromatography in a thin fixed layer of silica gel (more than 200 mesh)
in the water-saturated chloroform-methanol (2:1) system, and the spots were revealed with concentrated
sulfuric acid (Table 1).

The results of thin-layer chromatography showed the identity of the qualitative composition of the ex-
tractive substances from all three roots. Among the extractive substances, panaxosides of groups A and F
were completely represented [1]. As can be seen from Table 1, the plantation root is characterized by a
high moisture content (about 70% of the weight of the dry roots).

The overwhelming bulk of the extractive substances were obtained in the first extraction of the roots.
The second extraction in the cold gave practically nothing. The amounts of extractive substances in the
seven-year and the nine-year roots (total yield about 45% of the weight of the air-dry roots) differed little
from one another.

Thus, the seven- and nine-year roots are equivalent in use.

TABLE 1. Qualitative Composition of the Extractive Substances

Age of the roots	Wt. of roots, g		Moisture content		Yield of extractive substances									Total yield of extractive substances		
	crude	air- dry	g	%	extract I			extract II			extract III			1	2	3
					1	2	3	1	2	3	1	2	3			
9 years ¹	19,6	64,4	76,5	7,4	8,8	38,0	0,32	0,4	1,6	0,73	0,9	3,7	8,45	10	43	
7 years ²	22,3	47,7	68,0	9,9	14,2	43,8	0,23	0,3	1,0	0,51	0,7	2,3	10,64	15	47	
7 years ²	18,0	44,0	71,0	7,0	11,3	39,0	0,10	0,2	0,6	0,42	0,7	2,3	7,52	12	42	

Notes: 1) in grams; 2) as a percentage of the crude weight; 3) as
a percentage of the air-dry weight.

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