

AMOUNTS OF PHOSPHOLIPIDS AND PHYTIN IN THE SEEDS OF VARIOUS PLANTS. III.

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Continuing an investigation of the seeds of various plants for their content of phospholipids and phytin [1-3], we have analyzed the seeds of 24 plants belonging to various families. The phospholipids (PLs) were extracted from the defatted seeds by Folch's method [4]. In order to free them from carbohydrates, the total phospholipids were passed through Sephadex G-25, and they were freed from contamination with neutral lipids and substances of steroid nature with the aid of column chromatography on silica gel. The amounts of components in the purified total PLs were determined by two-dimensional TLC [2]. After the extraction of the PLs, the amount of phytin in the meal was determined. It has been stated previously [1] that to extract phytin the meal should be stirred with 1% nitric acid containing 20% of ethanol for 30 minutes each time. Further investigations have shown that stirring the suspension for 3-5 minutes is sufficient for the complete extraction of the phytin. The results of the investigation are given in Table 1.

TABLE 1. Amounts of Phospholipids and Phytin in the Seeds of Various Plants

Plant	Total phospholipids	Number of components in the total	Yield of phytin, %
Chenopodiaceae			
<i>Spinacia turkestanica</i> Iljin.	0,3	6	0,9
<i>Chenopodium lotrys</i> L.	0,4	7	0,4
<i>Atriplex patula</i> L.	0,4	6	1,8
Malvaceae			
<i>Abutilon theophrasti</i> Medic.	0,8	5	3,0
<i>Althaea nudiflora</i> Lindl.	0,7	6	0,6
<i>Althaea officinalis</i> L.	1,0	7	2,4
Solanaceae			
<i>Datura stramonium</i> L.	0,3	4	1,4
<i>Hyoscyamus niger</i> L.	0,9	6	3,6
Caprifoliaceae			
<i>Lonicera nummulariifolia</i> Jaub. et Spach.	0,8	6	1,5
Labiatae			
<i>Salvia macrosiphon</i> Boiss.	0,6	6	3,8
Rubiaceae			
<i>Rubia tinctorum</i> L.	0,9	8	0,6
Elaeagnaceae			
<i>Hippophaë rhamnoides</i> L.	0,3	6	3,4
Umbelliferae			
<i>Conium maculatum</i> L.	0,3	6	2,5
Polygonaceae			
<i>Rumex halaczii</i> Rech.	0,3	4	0,6
Apocynaceae			
<i>Vinca erecta</i> Rgl. et Schmalh.	0,15	7	0,04
Cynareae			
<i>Carthamus tinctorius</i> L.	0,7	9	2,2
Ranunculaceae			
<i>Adonis turkestanicus</i> (Korsh.) Adolf	0,4	5	2,8

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TABLE 1 (continued)

Plant	Total phospholipids	Number of components in the total	Yield of phytin, %
Caryophyllaceae			
<i>Vaccaria-segetalis</i> (Neck.) Garcke.	0,4	8	1,3
Punicaceae			
<i>Punica granatum</i> L.	0,3	6	1,9
Andropogoneae			
<i>Sorghum halepense</i> (L.) Pers.	0,3	6	1,6
Anacardiaceae			
<i>Rhus hirta</i> (L.) Sudw.	0,3	6	2,8
Meliaceae			
<i>Melia azedarach</i> L.	0,3	7	1,2
Geraniaceae			
<i>Erodium cicutarium</i> (L.) L. Her.	0,3	7	1,0
Amaranthaceae			
<i>Amaranthus retroflexus</i> L.	0,4	6	1,4

As can be seen from Table 1, the amounts of total PLs and phytin in the seeds of plants vary even within a given family. With respect to the amount of total PLs, attention is attracted by the seeds of some plants of families Malvaceae, Solanaceae, Caprifoliaceae, and Rubiaceae. With respect to the diversity of the qualitative compositions of their total PLs, the seeds of *M. azedarach* and *V. Segetalis* proved to be interesting, even though the amounts of total PLs in them are low. The seeds of some representatives of the families Malvaceae, Solanaceae, Caprifoliaceae, and Eleagnaceae are the richest in phytin.

LITERATURE CITED

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