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NOTES

The Seed Oil of *Withania somnifera* W.S.-20 Variety

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Withania Somnifera (W.S.-20 variety) seeds contain 10.1 per cent oil. The GLC analysis revealed the presence of linoleic 60.08, Oleic 18.53, palmitic 20.07, stearic 0.69, myristic 0.10 and an unknown acid 0.45 per cent.

Withania somnifera (N.O. Solanaceae) commonly known as Ashwagandha. It is cultivated mostly in Manasa tehsil of Mandsour district of Madhya Pradesh, India. It is an important drug in the ancient Ayurvedic literature. The bruised berries are rubbed on ring worm in human beings, on animal sores and girth galls in horses[1]. Fatty acid composition of the seed oil of *Withanias somnifera* is evaluated from the wild species found in Pakistan by Sattar *et. al.*[2] But the seed oil of Indian origin is not studied so far. The present communication deals with the fatty acid composition of the seed oil of *Withania somnifera* (W.S. -20) Indian variety.

The dried seeds of W.S. 20 were crushed and extracted with petroleum ether (60–80°C). The extract was dried over anhydrous sodium sulphate and after removal of the solvent, oil was obtained in 10.1 per cent yield. The physico-chemical values of the oil, determined by standard methods[3] are given in Table 1.

TABLE 1
PHYSICO-CHEMICAL PROPERTIES CF SEED OIL OF *WITHANIA SOMNIFERA* (W.S.-20)

1.	Specific gravity at 27°C	0.927
2.	Refractive index at 27°C	1.4672
3.	Acid Value	13.16
4.	Saponification value	185.32
5.	Iodine value (Hanus method)	144.33

TLC of fatty acids and their methyl esters

Silica gel G (B.D.H.) chromoplates were prepared, dried and activated at 110°C/30 min.. The ether solutions of the fatty acids and their methyl esters were

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spotted. The chromatograms were run with solvent system, petroleum ether (60–80°C), diethylether and acetic acid, (90 : 10 : 2) for 35 min. The different spots were visualised with iodine vapours, and marked for calculation of R_f values. Comparative TLC was carried out with standard sample of fatty acids and methyl esters. The results are given in Table 2.

TABLE 2
R_f VALUE OF FATTY ACIDS AND THEIR METHYL ESTERS.

S. No.	*Withania Somnifer*		Authentic		Inference
	Fattyacid	Methyl esters	Fatty acids	Methyl ester	
1.	0.97	0.95	0.95	0.93	Myristic
2.	0.89	0.87	0.88	0.86	Palmitic
3.	0.78	0.77	0.81	0.79	Oleic
4.	0.61	0.59	0.61	0.58	Stearic
5.	0.45	0.41	0.40	0.38	Linoleic
6.	0.33	0.31	—	—	Unidentified
7.	0.27	0.26	—	—	Unidentified

Gas chromatographic analysis

The methyl fatty acid ester was analysed for their chemical composition on a gas chromatography model Netal Omega by using a column of 10% DEGS on chromosorb at 185°. The detection was made with flame ionisation detector. Nitrogen was used as the carrier gas with a flow rate of 30 ml/min. The injection port temperature was 250°. The identification of the constituent fatty acids was made by running standard mixtures of methyl fatty esters under identical conditions with unknown and by comparing their retention times. The percentage of constituent fatty acids were determined from the peak areas and reported in Table 3.

TABLE 3
FATTY ACID COMPOSITION OF THE SEED OIL BY GAS CHROMATOGRAPY

Fatty acid	Percentage of fatty acid in oil of W.S. -20
Linoleic acid	60.08
Oleic acid	18.53
Palmitic acid	20.07
Stearic acid	0.69
Myristic acid	0.10

Seeds were collected from college of Agriculture, Mandsour (Madhya Pradesh). Where nearly thirty different lines has been collected, among which a new line (variety) has been identified for high root yield is named W.S. -20. The yield of oil by solvent extraction method are 10.1%.

The physico-chemical values shown in Table 1 were within the range of good quality vegetable oils.

Table 2 shows the composition of withania seed oil on TLC. There are ten spots of fatty acids were present on TLC plate and five of them were identified. The major fatty acid found is linoleic acid, others are myristic, palmitic, oleic and stearic acid. Some of fatty acids were not identified.

The fatty acid composition of the oil was determined by gas chromatography (Table 3), after converting the liberated fatty acids to their methyl esters. There are twelve peaks were present in the chromatogram. The fatty acid composition indicated the presence of higher amounts of unsaturated fatty acids (78.61%) compared to saturated acids (21.37%). Linoleic acid which contribute in reducing cholesterol contents in blood serum is abundent in this oil. Linoleic acid (60.08%) was the predominent unsaturated fatty acid and palmitic acid (20.07%) was the major saturated acid present in the oil. This fatty acid profile is similar to general composition pattern of the seed oils of solanaceae family. On the basis of their constituent fatty acids and high iodine values, the seed oil of *Withania somnifera* can be classified as unsaturated oil and may be utilised for its therapeutic value.

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