PYRIMIDINE OLIGONUCLEOTIDES OF THE DNA OF A COTTON PLANT OF THE GENUS Gossypium

Sh. A. Aripdzhanov, U. Tursunov, and A. P. Ibragimov

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We isolated the DNA from two-day etiolated shoots of cotton plants of varieties 108-F (G. hirsutum), S-6030 (G. barbadense), and 7059 (G. herbaceum) by a method which we have described previously [1]. The RNA was eliminated by means of previously-heated (80°C for 20 min) RNase at 37°C for 60 min, and the DNA was precipitated with two volumes of cooled ethanol.

The specific hydrolysis of the DNA was performed by Burton's method [2], and the separation of the nucleotides by size and by composition by column chromatography on DEAE-Sephadex A-25 [3]. For the DNA of each species, 14 nucleotides were identified.

The figures given in the Table show that the DNAs of the species of cotton investigated do not differ substantially with respect to their content of isopleths (blocks), but there are differences in the amounts of individual nucleotides. The block coefficient (β), calculated from the formula

$$\frac{(\text{pyrim})_n P_{n+1},\ n \leq 3}{(\text{pyrim})_n P_{n+1},\ n \geq 4}$$

amounted to 1.35, 1.46, and 1.56 for the DNAs of varieties 7059, 108-F, and S-6030, respectively.

TABLE 1. Amounts of Pyrimidine Nucleotides in the DNA, mole-%

Isopleths	Composition of nucleotides	108-F		S-6030		7059	
		amount of isopleth	nucleotide content	amount of isopleth	nucleotide content	amount of isopleth	nucleotide content
I	Cp_2	11,59±0,56	3,43±0,02	11,46±0,80	2,35±0,05	11,64±0,50	2,30±0,11
	Tp_2		8,16±0,22		9,06±0,60		9,34±0,30
II	C_2p_3	10,43±0,42	1,43±0,03	10,18±0,60	1,61±0,05	9,92±0,75	1,96±0,10
	CTp_3		5,05±0,01		4,80±0,08		4,53±0,20
	T_2p_3		3,91±0,06		3,77±0,10		3,43±0,12
III	C_3p_4	7,73±0,23	0,87±0,01	8,84±0,70	1,09±0,02	7,14±0,40	1,01±0,05
	C_2Tp_4		2,45±0,02		2,36±0,05		1,66±0,10
	CT_2p_4		2,76±0,04		3,26±0,10		2,96±0,10
	T_3p_4		1,65±0,03		2,13±0,10		1,51±0,05
IV	C_4p_5	6,40±0,15	0,57±0,01	5,88±0,30	0,61±0,03	6,03±0,50	0,56±0,03
	C_3Tp_5		1,74±0,02		1,55±0,02		1,11±0,06
	$C_2T_2p_5$		1,98±0,02		1,76±0,15		1,73±0,10
	CT_3p_5		1,68±0,03		1,50±0,05		2,06±0,15
	T_4p_5		0,44±0,01		0,56±0,02		0,57±0,02
V	—	4,17±0,59	—	4,72±0,25	—	5,48±0,45	—
VI	—	9,68±0,95	—	8,92±0,60	—	9,79±0,85	—
β	—	1,46	—	1,56	—	1,35	—

LITERATURE CITED

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