

LINKAGE RELATIONS OF GENES af-i ON CHROMOSOME 1 AND curl-tl ON CHROMOSOME 7 IN PEAS (Pisum sativum L.)

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The gene af which converts the leaflets into tendrils is largely used in breeding programs for improving standing ability of pea. Its location on chromosome 1, first reported by Khangildin (2), subsequently has been confirmed by others (1,3,4,5,6,9) but the values of linkage intensity between af and i obtained by different authors has varied widely: 45.8% (2), 5.36% (3), 14.5% (9), 7.47% (1), 8.3% (4), 3.7% (5), 3.72% in the greenhouse, and 5.69% in the field (6). The factors leading to such great variation of recombination fraction values are still unknown.

Genetic analysis of the F<sub>2</sub> population resulting from the cross F81-1261 (af af i i) x cv. 'Auralia' (Af Af I I) confirmed the linkage af-i on chromosome 1. The recombination fraction value was  $7.20 \pm 1.27$  (Table 1).

Table 1. Analysis of joint segregation in F<sub>2</sub> for genes af and i.

Gene pair	Xy			Chi-square			Recomb. fract.	S.E.	
	XY	xY	xy	X	Y	Linkage			
Af i	314	16	16	450	0.67	0.67	328.8***	7.20	1.27

\*\*\* Significant at 0.001

The mutant curl was obtained by Sidorova and Uzhintzeva (8) by treating 'Torsdag' seeds with EMS. The same mutant was obtained also at I.C.C.P.T.-Fundulea by gamma irradiation of seeds of line F70-413. The line possessing the mutant gene was designated MF-13 curl. Marx (7) has located the gene curl on chromosome 7.

Analysis of F<sub>2</sub> populations of crosses of MF-13 curl, line with several lines possessing marker genes for different chromosomes confirmed the location of curl gene on chromosome 7 (Table 2). The recombination fraction value between the genes curl and t1 was  $26.95 \pm 3.79$ .

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Table 2. Analysis of joint segregation in F2 for curl and different gene markers.

Gene pair	XY	xy	xY	xy	Total	Chi-square			Recomb. fract.	S.E.
						X	Y	Linkage		
<u>Curl Af</u>	258	91	77	29	455	0.70	0.46	0.06	ns	
<u>Curl St</u>	155	42	48	20	265	0.06	0.36	1.77	ns	
<u>Curl Le</u>	196	61	80	19	356	1.50	1.21	0.98	ns	
<u>Curl Gp</u>	99	39	36	12	186	0.06	0.58	0.19	ns	
<u>Curl Pl</u>	164	50	54	20	288	0.07	0.07	0.40	ns	
<u>Curl -Tl</u>	288	123-	108	8	527	2.51	0.01	30.60	**	26.95 3.79

\*\* Significant at 0.01

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