

CONFIRMING DATA FOR MAPPING ISOZYMIC LOCUS Aat-p

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An isozyme linkage map for Pisum was published by Weeden in 1985 (1), providing an additional group of markers useful for gene mapping, as well as for genotype/cultivar characterization (2). One of these enzymes was analyzed at Wiatrowo, i.e. Aspartate aminotransferase - Aat-p (=Glutamate oxaloacetate transaminase Got-1). The testerline WL 851 (allele B<sub>1</sub>, slow for Got-1) was crossed with Wt 3838, cv. 'Arabal' (allele B<sub>1</sub>, fast). These lines also have different alleles of genes A and Lf. Plants of the F<sub>1</sub> generation showed the dominant phenotype for A and Lf as well as a heterozygotic pattern for Aat-p (Got-1). An undisturbed monohybrid segregation in F<sub>2</sub> was observed for A, Lf, as well as for Aat-p (Table 1A). A 3:1 segregation for Lf-lf was obtained on the basis of considering individuals with the first flowering node below 6 as recessives. For Aat-p (Got-1) co-dominant type of inheritance was observed (1:2:1) but for linkage calculations allele B<sub>1</sub> of Got-1 (fast variant) was added to the heterozygotes to get the 3:1 segregation pattern. The dihybrid segregation between Aat-p (Got-1) with A and Lf produced the following CrO values (Table 1B).

Aat-p-----27.0-----A-----18.7-----Lf  
I-----32.0-----I

The above confirms Weeden's data showing linkage between Aat-p and A as 30 units and also extends the linkage relations to the Lf locus of chromosome 1.

1. Weeden, N.F. 1985. The Pea Crop, P.D. Hebblethwaite, M.C. Heath, and T.C.K. Dawkins, eds. Butterworths, London. pp. 55-66.
2. Wolko, B. and W.K. Swiecicki. 1987. PNL 19:89.

Table 1 Phenotypes distribution in an F<sub>2</sub> population segregating for Aat-p (Got-1) from the cross Wt 851 x Wt 3838.

A. Monohybrid F<sub>1</sub> segregation

	<u>Aat-p</u>	aat-p	Total	Chi-square (3 1)
	150	45	195	0.38
<u>A</u>		a		
	148	46	194	0.17
<u>Lf</u>		lf		
	150	43	173	0.002

B. Joint segregation of Aat-p with A and Lf

A, <u>Aat-p</u>	A, aat-p	a, <u>Aat-p</u>	a, aat-p	Total	Joint chi-square	Recomb. fract.	S.E.
105	42	43	3	194	10.09**	27.01	6.6
<u>Aat-p</u> , <u>Lf</u>	<u>Aat-p</u> , lf	aat-p, <u>Lf</u>	aat-p, lf				
94	39	36	4	173	6.25*	32.02	6.7
A, lf	A, lf	a, <u>Lf</u>	a, lf				
115	15	14	28	172	49.16**	18.68	3.4

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