CLOSE LINKAGE BETWEEN GLUTAMATE OXALOACETIC TRANSAMINASE AND PHOSPHOGLUCOSE ISOMERASE ALLOZYME LOCI IN LARIX DECIDUA MILL.

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ABSTRACT

Presented data confirmed that the close linkage between loci of asparate aminotransferase and phosphoglucose isomerase reported for many conifer species also holds in European larch (R = 0.026). However contrary to the members of the Pinus and Picea group a close linkage exists between Got-2 and Pgi-2 loci.

Key words: Larix decidua Mill, allozyme, inheritance, linkage.

INTRODUCTION

Despite advances in molecular biology techniques, allozymes are still useful tools in population genetics. Various analyses in population genetics, e.g. estimation of mating systems parameters and genetic distances, require information from a number of independent loci (Shaw et al. 1981; Nei 1975). Conifers are especially convenient for linkage analysis. Linkage can be detected without making crosses by testing independence of single-loci segregation in the haploid macrogametophyte tissue of seed from trees heterozygous for at least two loci.

In the genus Larix a few linkage studies have been performed and some more or less closely linked loci have been established (CheliaK & Pitel 1985; Ying & Morgenstern 1990; Lewandowski & Mienartowicz 1991).

In this paper, results indicating close linkage between the Got-2 and Pgi-2 loci in Larix decidua are presented.

MATERIALS AND METHODS

Among the analysed trees of European larch (Larix decidua Mill.) from Poland one rare tree heterozygous for both the Got-2 and Pgi-2 loci were found. A total of 76 macrogametophytes were analysed. Macrogametophyte tissue was homogenized in 30 µl of Tris- HCL buffer pH 7.2 with the addition of 15% 2-mercaptoethanol. Electrophoretic separation was carried out in 12% starch gel by applying a buffer system according to Ridgeway et al. 1970. Gel slices were stained for activity of glutamate oxaloacetic transam-
of the most highly conserved gene blocks that is known in conifer karyology.

In studies where different species of the genera *Abies*, *Larix* and *Pseudotsuga* are involved, linkage has been observed to exist between *Got-2* and *Pgi-2*.

(NEALE & ADAMS 1981; CHELIK & PITEL 1985; EL-KASSABY et al. 1982) In contrast, in species from the genera *Pinus* and *Picea* linkage exists between *Got-1* and *Pgi-2* (GURIES & LEDIG 1978; ADAMS & JOLY 1980; CONKLE 1981; STRAUSS & CONKLE 1986; GONCHARENKO et al. 1998; KING & DANCIK 1983; MUONA et al. 1987). CHELIK & PITEL (1985) suggested that evolution from the last common ancestor between the *Pinus* – *Picea* group, and the other genera has progressed to the point where accumulated mutations can now be observed as electrophoretic mobility differences. Thus, *Got-1* in the *Pinus–Picea* group is functionally *Got-2* in the other genera and similiar *Got-1* in *Abies*, *Larix* and *Pseudotsuga* is functionally *Got-2* in the *Pinus* – *Picea* group. Results reported in this paper fully agree with this suggestions.

**REFERENCES**


