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Hsieh K, Wang Y-C, Lin B-L (1998) *At-hsc70-3* encodes a cytosolic Hsp70 in Arabidopsis (accession no. ATY17053) (PGR 98–139). *Plant Physiol* **117**: 1525.

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Plant Gene Register PGR 98–139

At-hsc70-3 Encodes a Cytosolic Hsp70 in Arabidopsis (Accession No. ATY17053).

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Plant Gene Register PGR 98–140

A cDNA (Accession No. AJ006766) from Chickpea Epicotyls That Encodes a Protein Homologous to a Phosphate-Starvation-Induced Protein.

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Plant Gene Register PGR 98–141

Withdrawn.

Plant Gene Register PGR 98–142

A Tobacco SKP1-Like Gene (Accession No. AF070967) Is Expressed Constitutively during the Cell Cycle.

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Plant Gene Register PGR 98–143

Maize Coleoptile Endoglucanase Is Encoded by a Novel Gene Family (Accession No. AF072326).

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Plant Gene Register PGR 98–144

Three Cotton Fiber-Expressed cDNAs (Accession Nos. AF072404, AF072405, and AF072406).

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Plant Gene Register PGR98-140

Francisco J. Muñoz, Berta Dopico, and Emilia Labrador (1998) A cDNA (Accession No. AJ006766) From Chickpea Epicotyls That Encodes A Protein Homologous To A Pi Starvation Induced Protein. (PGR98-140) *Plant Physiol.* **117**: 1525

A cDNA (Accession No. AJ006766) From Chickpea Epicotyls That Encodes A Protein Homologous To A Pi Starvation Induced Protein

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We report here the nucleotide sequence of a cDNA (CanB15) isolated from a cDNA library constructed from mRNA of 5-day-old chickpea epicotyls (*Cicer arietinum* L cv castellana). This cDNA is highly homologous to a cDNA of *Nicotiana tabacum* (pAL141) that encodes a protein induced by Pi starvation in cultured tobacco cells (Accession Number D29681, Ezaki *et al.* 1995) (72.8 % identity and 64.1% identity at nucleotide and amino acid sequence respectively). Also, nucleotide sequence homologies were found to an Arabidopsis EST (AN N96931), rice ESTs (AN D23159, C20214, C20327) and a cDNA from *Linum usitatissimum* that encodes an alpha-hydroxynitrile lyase (Accession number Y09084) (Trummler and Wajant, 1997), but no significant homologies (15%) were found at amino acid sequence.

The CanB15 from *Cicer arietinum* is a full length clone of 579 bp. A small ORF of 387 that encodes a putative protein of 129 aa was found. The polyadenylation signal AAATAA was found at nucleotides 388-393. The protein has a molecular weight of 13.8 Kd and an isoelectric point of 6.33. A high percentage of serine (17.05%) followed by leucine (10.85%) was found. The expression of CanB15 was studied throughout the chickpea epicotyl growth. Low transcript levels appear at 2-days-old epicotyls when the growth is starting and the expression is up-regulated when the growth rate increases. The highest transcript level was observed at 4-days-old epicotyls, with maximum epicotyl growth ability, slightly decreasing after that.

The study of the expression in different organs of 5-day-old *Cicer arietinum* seedlings indicated that the highest levels of expression are in cotyledons and roots, showing the lowest level in the apical hook. This model of expression, being the highest in roots and cotyledons could be related with the postulated function for the homologous PAL141 from *Nicotiana tabacum* in nutrient starvation, although no studies were made in this sense.

Acknowledgements

This research was supported by a grant from the Dirección General de Investigación Científica y Técnica (DGICYT), Spain (PB94-1395).

Table I. Characteristics of CanB15 from *Cicer arietinum*

Organism:

Cicer arietinum L cv. castellana

Clone Type, Designation:

cDNA, full length, CanB15

Source:

cDNA library in lambda-ZAP constructed from poly A+ RNA from *Cicer arietinum* 5-day-old epicotyls.

Gene identification:

Nucleotide and amino acid sequence comparisons to published sequences in GenBank and EMBL data bases and Swiss-Prot and Blitz data bases respectively.

Feature of the cDNA:

The clone is 579 bp in length, including a complete ORF of 387 bp, 13-bp 5' untranslated sequence and 179-bp 3' untranslated sequence.

Features of deduced protein:

The ORF encodes a 129 amino acid polypeptide. The encoded protein has a predicted molecular mass of 13.8 kD and an isoelectric point of 6.33. The amino acid serine (17.05%) presents the highest percentage.

Gene product:

Protein homologous to Pi starvation -induced protein.

Literature cited

Ezaki B, Yamamoto Y, Matsumoto H (1995) Cloning and sequencing of the cDNAs induced by aluminium treatment and Pi starvation in cultured tobacco cells. *Physiol. Plant.* **93**:11-18

Trummler K, Wajant H (1997) Molecular cloning of acetone cyanohydrin lyase from flax (*Linum usitatissimum*). *J. Mol. Biol.* **272**:4770-4774



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