

## Nucleotide sequence of a cDNA encoding an $\alpha/\beta$ -type gliadin from hexaploid wheat (*Triticum aestivum*)

Federico García-Maroto,<sup>1</sup> Carmen Maraña,<sup>1,2</sup> Francisco García-Olmedo<sup>1</sup> and Pilar Carbonero<sup>1\*</sup>  
<sup>1</sup> *Cátedra de Bioquímica y Biología Molecular, E.T.S. Ingenieros Agrónomos-UPM, E-28040 Madrid, Spain (\* author for correspondence);* <sup>2</sup> *present address: Vrije Universiteit Brussel, Laboratory of Viral Genetics, Paardenstraat 65, B-1640 St Genesis Rode, Belgium*

Received and accepted 10 January 1990

The classification and nomenclature of wheat gluten proteins has been recently reassessed [6]. Gliadins of the  $\alpha/\beta$  type are a subgroup of the S-rich prolamins which are characterized by a particular domain structure [6]. The cDNAs and/or genomic DNAs of a number of genetic variants have been cloned and sequenced [1–5, 7].

We have isolated a cDNA clone from a library obtained from developing endosperm of *Triticum aestivum* cv. Chinese Spring which encodes an  $\alpha/\beta$ -type gliadin that differs from previously described ones. The nucleotide sequence and deduced amino acid sequence of the new  $\alpha/\beta$ -gliadin clone, designated MM1, have been aligned in Fig. 1 with those corresponding to the class A-IV  $\alpha/\beta$ -gliadin of Okita *et al.* [3], which shows the closest resemblance to MM1 among those previously described. The proline-rich N-terminal domain is described in terms of six heptapeptide (VII-1 to VII-6) and six hexapeptide (VI-1 to VI-6) repeats, the hexapeptide consensus being contained in the heptapeptide one: (L)P<sub>Y</sub><sup>F</sup>PQPQ. The following features of gliadin MM1 are different from the aligned class A-IV gliadin A735: (1) the additional heptapeptide VII-5, which is an identical replica of VII-3 and VII-4; (2) an additional nonapeptide in the first long poly-Q stretch (residues 141–149); (3) two QQQ deletions at positions 134 and 231. Apart from the

alluded insertions and deletions, only 13 nt changes are observed out of 921 coding nt, 11 of which lead to amino acid changes.

### Acknowledgements

F.G.M. was the recipient of a postdoctoral scholarship from the Ministerio de Educación y Ciencia. This work was supported by grant Bio88-0216 from Comisión Interministerial de Ciencia y Tecnología (Spain).

### References

1. Anderson OD, Litts JC, Gautier M-F, Greene FC: Nucleic acid sequence and chromosome assignment of a wheat storage protein gene. *Nucl Acids Res.* 12: 8129–8144 (1984).
2. Kasarda DD, Okita TW, Bernardin JE, Baecker PA, Nimmo CC, Lew EJ-L, Dietler MD, Greene FC: Nucleic acid (cDNA) and amino acid sequences of  $\alpha$ -type gliadins from wheat (*Triticum aestivum*). *Proc Natl Acad Sci USA* 81: 4712–4716.
3. Okita TW, Cheesbrough C, Reeves CD: Evolution and heterogeneity of the  $\alpha/\beta$ -type and  $\gamma$ -type gliadin DNA sequences. *J Biol Chem* 260: 8203–8213 (1985).
4. Rafalski JA, Scheets K, Metzler M, Peterson DM, Hedgcoth C, Söll DG: Developmentally regulated plant genes: the nucleotide sequence of a wheat gliadin genomic clone. *EMBO J* 3: 1409–1415 (1984).

