

Chloroform/Methanol-Soluble Proteins are the Main Components of *Triticum durum* Sulfur-Rich Glutenin Fractions

To the Editor:

According to Alary and Kobrehel (1987), the surface state of cooked pasta, which is an important aspect of cooking quality, is positively correlated to the total amount of sulfhydryl (-SH) plus disulfide (S-S) groups in glutenins. Kobrehel et al (1988) showed that the sulfur-rich glutenin fraction is composed of two major low molecular weight proteins, termed DSG proteins (durum wheat sulfur-rich glutenin fractions) and classified as glutenins according to their solubility properties. These were extracted with Na-tetradecanoate, either from semolina after sequential extraction of albumins, globulins, and gliadins or from gluten after extraction of gliadins (Kobrehel and Alary 1989b).

Recently, the isolation and characterization of a cDNA clone encoding a DSG1 protein demonstrated that the main components of DSG fractions are CM-proteins (Gautier et al 1989), named for their solubility in chloroform/methanol mixtures (Garcia-Olmedo and Garcia-Faure 1969). CM-proteins are usually classified in the albumin-globulin fraction; however, on the basis of their conditions of extraction, durum wheat DSG fractions do not fit in this classification.

Authenticity of the cDNA clone isolated by Gautier et al (1989) as that which codes for a DSG1 protein was established by identifying the sequence of the translated protein with the 24 N-terminal amino acids of DSG1 determined previously (Kobrehel and Alary 1989b). Furthermore, the amino acid composition and molecular weight of the translated protein were quite similar to that of the purified DSG1 protein. This translated protein contains 10 cysteine residues whose positions and number are identical to those reported for the members of the α -amylase/trypsin inhibitor family (Garcia-Olmedo et al 1987). CM-proteins belong to this large family, and in *Triticum durum* three main components—CM2, CM3, and CM16—have been found. The cDNA clone we isolated encodes the *T. durum* CM16 protein (Gautier et al 1989). Furthermore, the N-terminal sequences of DSG1 and DSG2 (Kobrehel and Alary 1989b) are identical to the N-terminal sequences of CM16 (Barber et al 1986) and CM3 (Shewry et al 1984) proteins, respectively. These results support the hypothesis that CM16 and CM3 are the main components of the DSG1 and DSG2 fractions, respectively.

Because the relationship between the surface state of cooked pasta and the sulfur-rich protein fraction has been demonstrated on a complex fraction, it is necessary to determine the role of isolated components of DSG fractions. Research is now in progress to isolate, on a large scale, CM-proteins (DSG fractions) and to study their functionality as pure polypeptides. It should be noted that specific lipids are tightly bound to DSG fractions, which may also contribute to their functional properties (Kobrehel and Sauvaire 1989).

CM-proteins may be monomeric subunits of the wheat

tetrameric α -amylase inhibitor (Garcia-Olmedo et al 1987) that was isolated by Buonocore et al (1985). According to the results of Kobrehel and Alary (1989a) durum wheat CM-proteins are involved in the quality characteristics of pasta. To our knowledge, this is the first time that such a functionality is mentioned for a CM-protein.

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