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## Charge-based characterisation of high-molecular-weight glutenin subunits from common wheat by capillary isoelectric focusing

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### ABSTRACT

In this study, the capillary isoelectric focusing (CIEF) method for the separation and charge characterisation of the heterogeneity of high molecular-weight glutenin subunits (HMW-GS) in common wheat (*Triticum aestivum* L.) using linear polyacrylamide (LPA) and polyvinyl alcohol (PVA) coated capillaries was developed. Particularly good repeatability and well-resolved charge isoform profiles were obtained by introducing a mixture of carrier ampholytes (pH 3-10 and pH 5-8), a high concentration of urea (6 M) and SB3-12 as detergent in a sample solution during separation in a PVA-coated capillary. One major and one or two minor isoforms were observed for the individual HMW-GS. These isoforms were satisfactorily separated using a pH gradient into two groups: y-type isoforms and x-type isoforms encoded by the *Glu-B1* locus with shorter migration times and remaining x-type isoforms with longer times. The method produced from eight to twelve isoforms of wheat HMW-GS with *pI* points in the range of 4.72 to 6.98. Generally, the minor isoforms were more acidic compared with the major isoform. The y-type subunits had an approximately neutral character (*pI* 6.70-6.98); however, x-types showed a weakly acidic character (*pI* 4.72-5.23), with the exception of subunits encoded by the *Glu-B1* locus. The isoelectric point peak profiles were compared with capillary zone electrophoresis (CZE) electropherograms. Generally, the number of detected isoforms for the particular HMW-GS detected using both methods was similar.

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