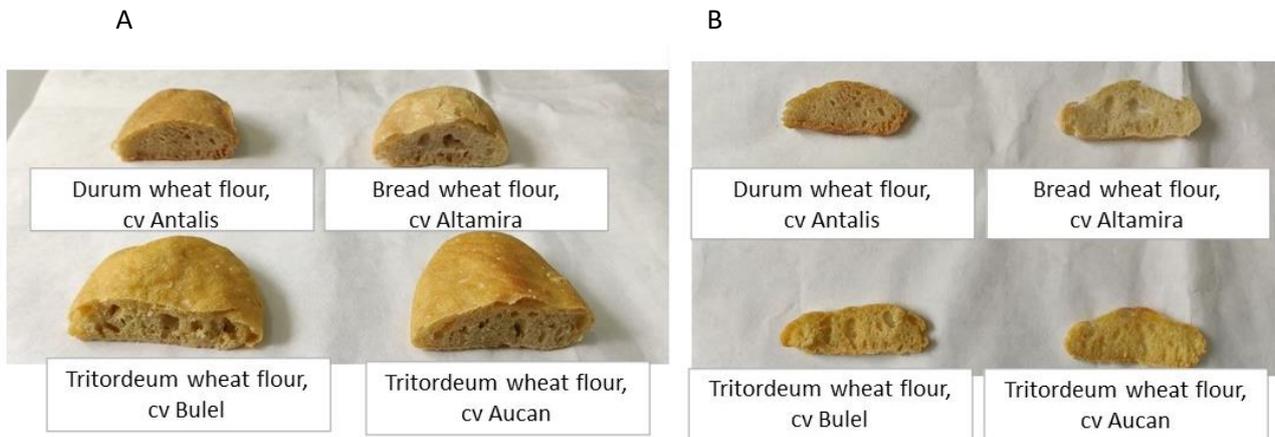


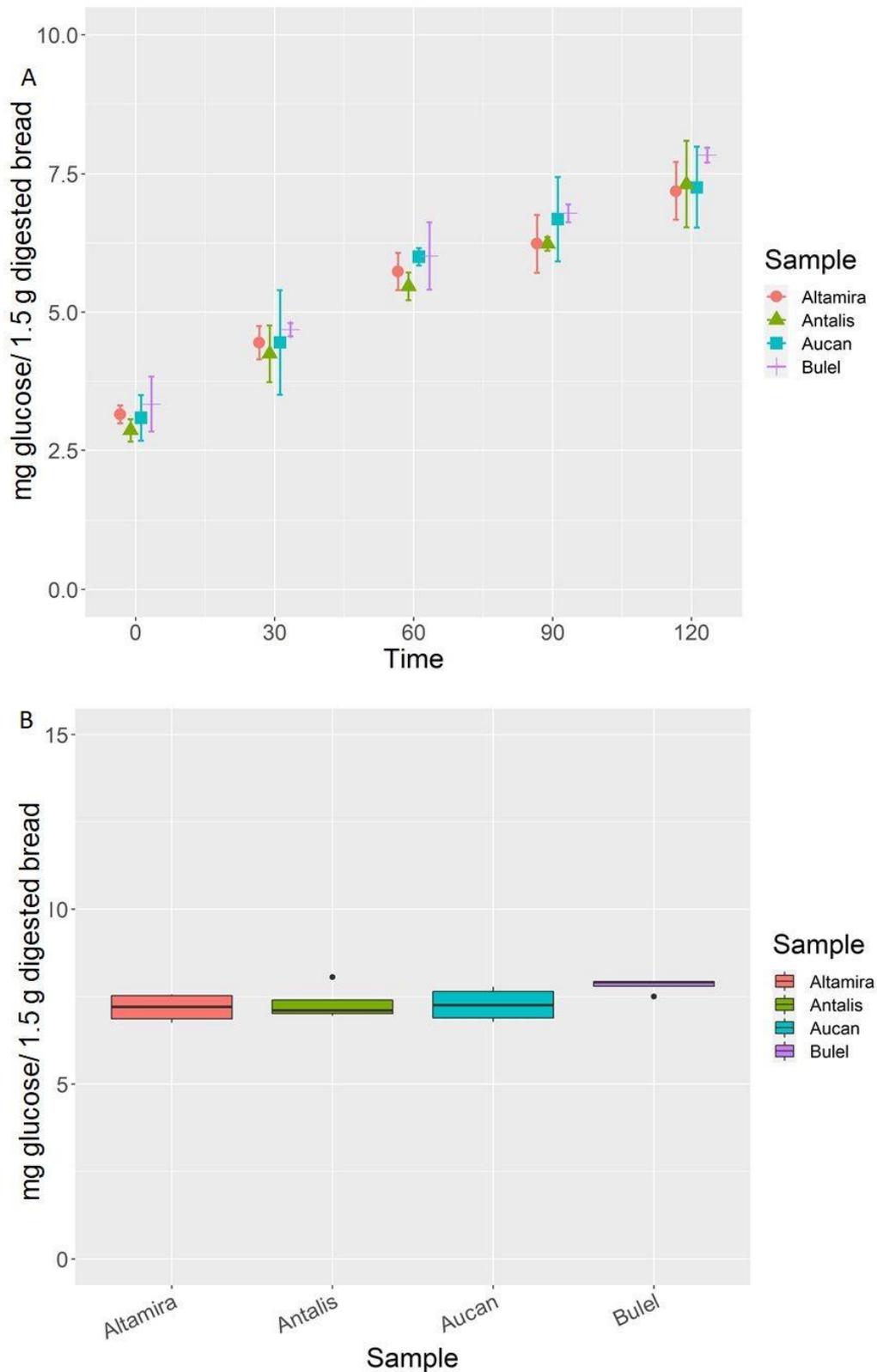
### Supplementary Figure S1

A) Breads prepared with 100% reference flour. B) Sliced bread. Tritordeum bread appear yellower than soft wheat. Tritordeum Baked breads showed a comparable alveolation to soft wheat bread, cv Altamira.



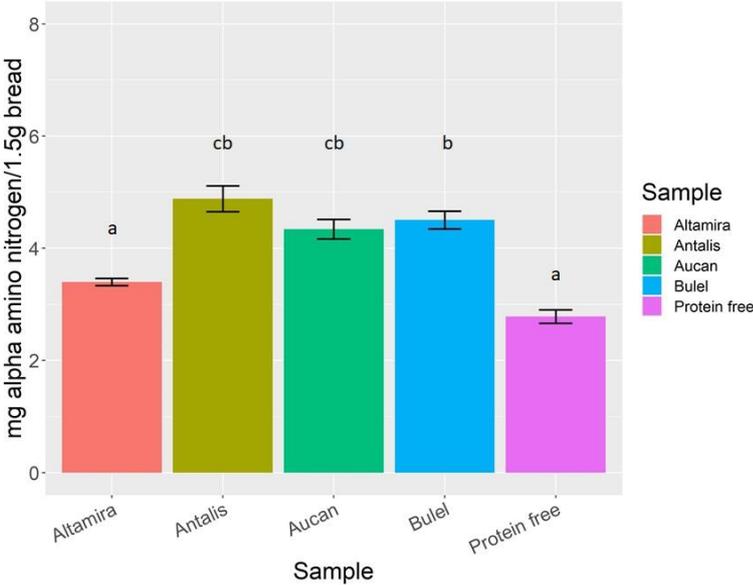
### Supplementary Figure S2

Reducing sugar release (expressed as mg of glucose) from 1.5 g of digested breads. Error bars represent the variability over two breads digested in two days and two technical replicates. Panel A) kinetic of breads duodenal digestion (0-30-60-90 and 120 minutes), Panel B) mg of reducing sugar released after 4 hours of gastroduodenal digestion of 1.5 g of bread.



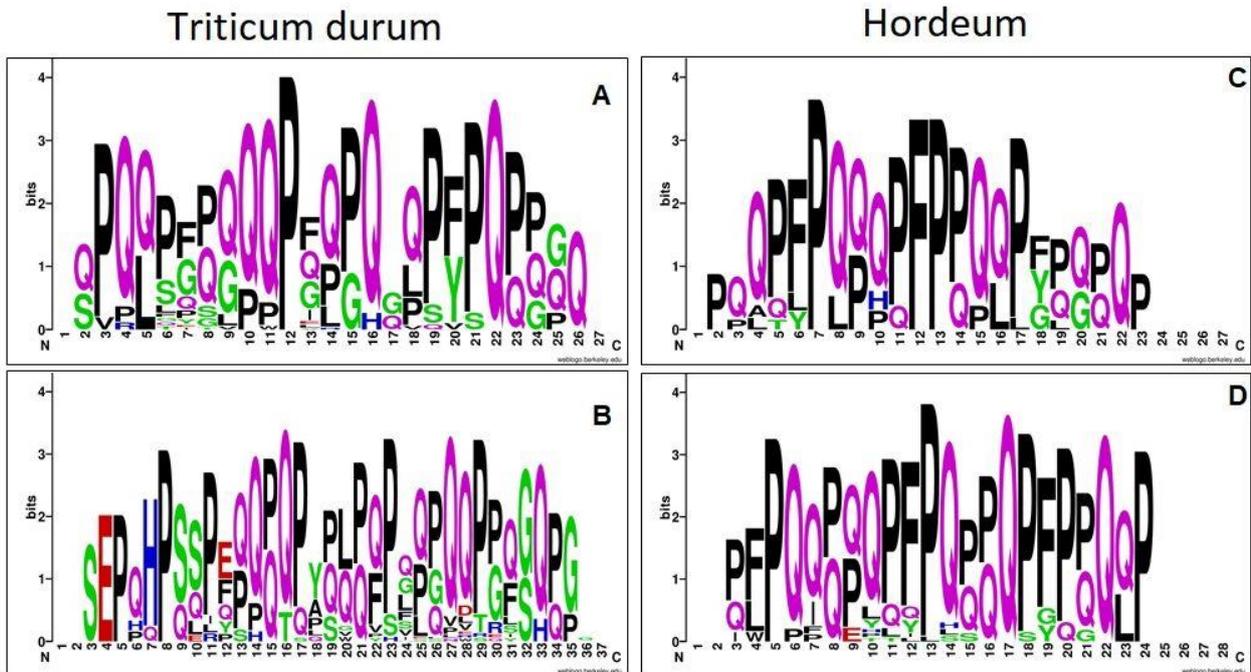
**Supplementary figure S3**

mg of alpha amino nitrogen determined in 1.5 g of the cooked breads. Bars with different letters are significantly different ( $p$ -value < 0.05) and the REGW-F test.



### Supplementary figure S4

Graphical representation of the peptides surviving the digestion. Peptides belonging to the same protein region were aligned and the height of the amino acid reflects its abundance in the sequences. The sequence R5-QQPFP sequence was highly repeated in Aucan bread Triticum derived peptides, while in Bules was found highly repeated in Hordeum derived peptides. Sequence logo of unique peptides from Aucan (Panel A, C) and Bulel (Panel B, D) bread duodenal digestomes. The frequency of the sequences is expressed in bits.



## Supplementary figure S5

Coverage of the *Triticum durum* HMW GS (K4N1X7) by digestion resistant peptides from Aucan bread (panel A) and Bulel bread (panel B). The alignment highlights the uniqueness in several cases is due to the hydrolysis of peptides differing by few amino acids (Supplementary table 5).

A

Protein Coverage:

```

1  MAKRLVLFAAA VVVALMALTA AEGEASGQLQ CERELRKREL EAYQQVVDQQ LRDVSPGYRP ITVSPGTRQY EQQPVVPSKA
81  GSFYPSETTP SBQQLQBMIFW GIPALLRRYY PSVTSSQQGS YYPGQAFPQQ SGQGQQPGQG QQPGGQRQDDQ QPGQGQQGY
161 PTSPQQPGQG QQLGQGQPGY YPTSQQPGQK QQAGQGQSG QGQRRYYPTS PQSGQGQQP GQGQPGYYPI SPQQSEQWQQ
241 PGQGQQPGQG QQSGQGQQGQ QPGQGQRPGQ GQQGYPTSL QQPGQGQSG QGQPGYYPTS SRQPGWQQP GQGQQPGQGQ
321 QGQQPGQGQQ PGQGQQGYYP TSLQQPGQGQ QPGQGQPGYY PTSPQQPGQG KQPGQGQRY YPTSSQQSGQ GQQPGQGQPG
401 YYPTSPQSG QGQQSGQAQQ GYYPTSPQGS GQGQQPGQRQ SGYFPTSRRQ SGQGQQPGQG QQSGQGQDDQ QPGQGQQAYY
481 PTSSQQSGQR RQAGQWQRPG QGQPGYYPTS PQQPGQEQQS GQAQQSGQWQ LVYYPTSLQQ PGQLQQPAQG QQPAQGQSA
561 QEQQPGQAQQ SGQWQLVYYP TSPQQPGQLQ QPAQGQQGY PTSPQQSGQG QGQYYPTSPQ QSGQGQQGY PTSPQSGQG
641 QQPGQGQQPR QGQQGYYPIS PQQSGGQQT GQGQQGYPT SPQQSGGQQ PRHEQQPGQW LQPGQGQQGY YPTSSQQSGQ
721 GQQSGGQQG YYPTSLWQPG QGQQPGQRQQ GYDSPYHVSA EYQAARLKVA KAQQLAAQLP AMCRLEGSDA LSASQ

```

B

Protein Coverage:

```

1  MAKRLVLFAAA VVVALMALTA AEGEASGQLQ CERELRKREL EAYQQVVDQQ LRDVSPGYRP ITVSPGTRQY EQQPVVPSKA
81  GSFYPSETTP SBQQLQBMIFW GIPALLRRYY PSVTSSQQGS YYPGQAFPQQ SGQGQQPGQG QQPGQRQDDQ QPGQGQQGY
161 PTSPQQPGQG QQLGQGQPGY YPTSQQPGQK QQAGQGQSG QGQRRYYPTS PQSGQGQQP GQGQPGYYPI SPQQSEQWQQ
241 PGQGQQPGQG QQSGQGQQGQ QPGQGQRPGQ GQQGYPTSL QQPGQGQSG QGQPGYYPTS SRQPGWQQP GQGQQPGQGQ
321 QGQQPGQGQQ PGQGQQGYYP TSLQQPGQGQ QPGQGQPGYY PTSPQQPGQG KQPGQGQRY YPTSSQQSGQ GQQPGQGQPG
401 YYPTSPQSG QGQQSGQAQQ GYYPTSPQGS GQGQQPGQRQ SGYFPTSRRQ SGQGQQPGQG QQSGQGQDDQ QPGQGQQAYY
481 PTSSQQSGQR RQAGQWQRPG QGQPGYYPTS PQQPGQEQQS GQAQQSGQWQ LVYYPTSLQQ PGQLQQPAQG QQPAQGQSA
561 QEQQPGQAQQ SGQWQLVYYP TSPQQPGQLQ QPAQGQQGY PTSPQQSGQG QGQYYPTSPQ QSGQGQQGY PTSPQSGQG
641 642QQPGQGQQPR QGQQGYYPIS PQQSGGQQT GQGQQGYPT SPQQSGGQQ PRHEQQPGQW LQPGQGQQGY YPTSSQQSGQ
721 GQQSGGQQG YYPTSLWQPG QGQQPGQRQQ GYDSPYHVSA EYQAARLKVA KAQQLAAQLP AMCRLEGSDA LSASQ

```

■ Deamidation (NQ) (+0.98)  
■ Pyro-glu from Q (-17.03)