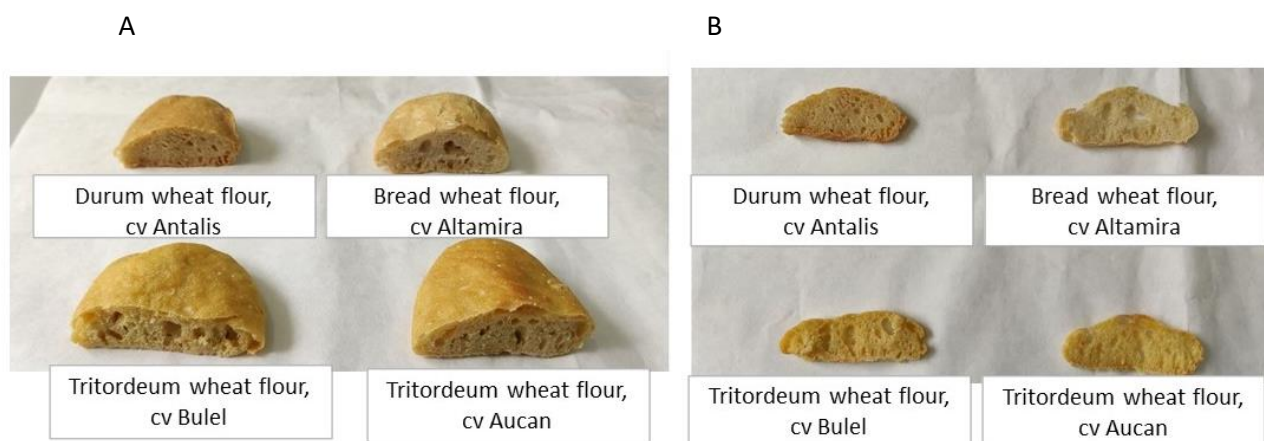


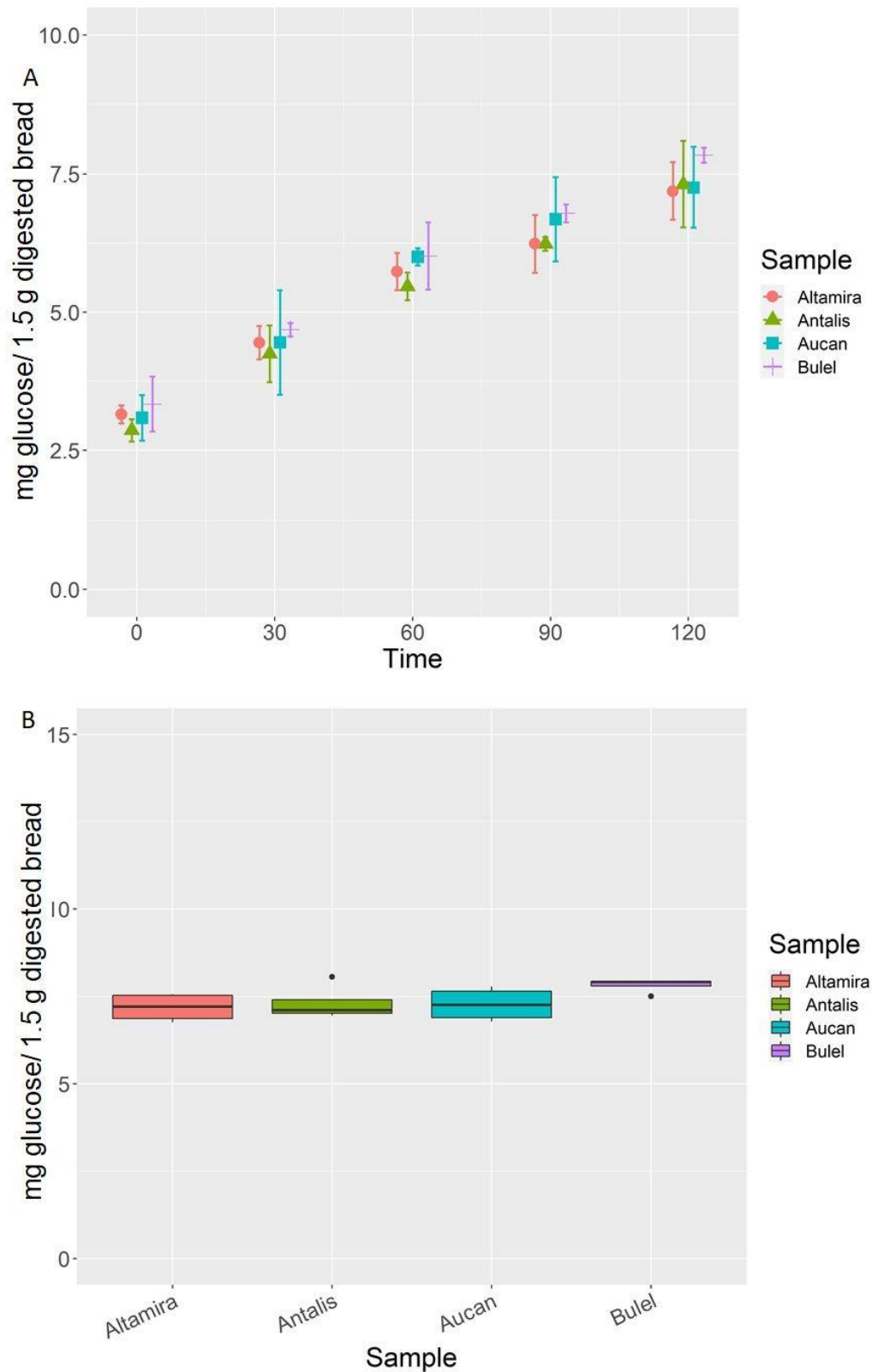
### Supplementary Figure S1

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.



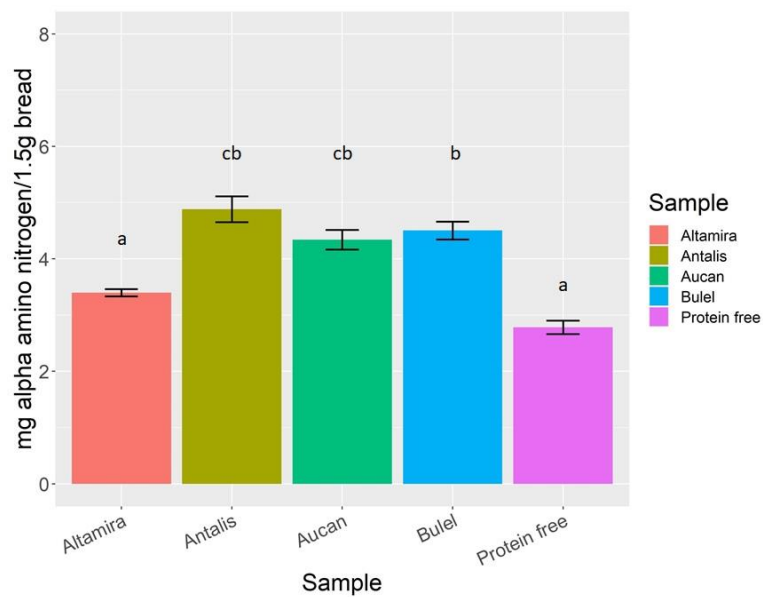
**Supplementary Figure S2**

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.



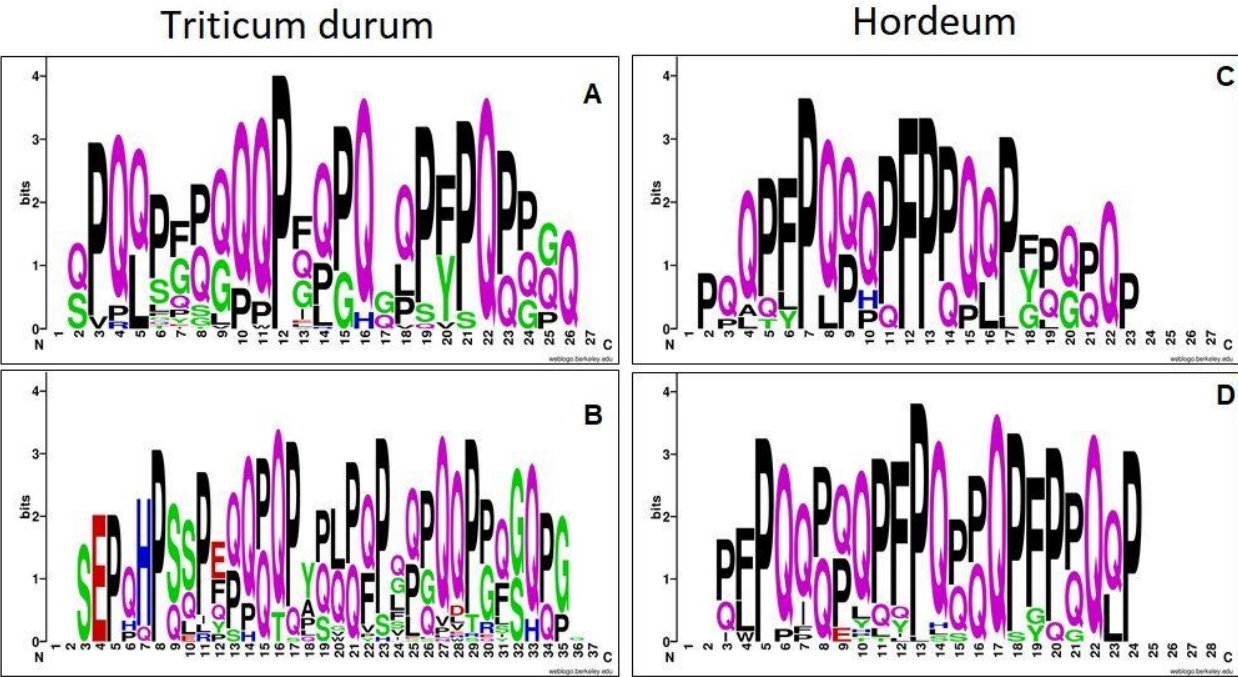
**Supplementary figure S3**

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-QQFPF 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  MAKRLVLF642FAA VVVALMALTA AE642GEASGQLQ CERELRKREL EAYQQVVDQQ LRDVSPGYRP ITVSPGTRQY EQQPVVPSKA
81  GSFY642PSETTP SQQLQQMIFW GIPALLRRYY PSVTSSQQGS YYPGQAF642PQQ SGQGGQPGQG QQP642GQRQDDQ QPGQGQQGY
161 PTSPQQPGQG QQLGQGQPGY YPTSQQPGQK QQAGQGQSG QGQRY642YPTS PQSGGQQP GQGQPGYPI SPQSE642WQQ
241 PGQGGQPGQG QSGGQGGQ QPGGQRPQG GQGYYPTSL QPGGQGSQ GQPGYYPTS SRPGWQQP GQGQPGQG
321 QGQPGQGQ PGQGQGYYP TSLQPGQG QPGGQPGY PTSPQQPGQG KPGGQQR642Y YPTSSQSGQ GQPGGQPG
401 YYPTSPQSG QGQSGQAQ GYYPTSPQS GQGQPGQRQ SGYFPTS642RQ SGQGGQPGQG QSGGQDDQ QPGQGQAYY
481 PTSSQSGQR RQAGWQRP GQPGYYPTS PQQPGEQQS GQAQSGQWQ LVYYPTSLQ PGQLQPAQG QPAQGQSA
561 QEQPGQAQ SGWQLVYYP TSPQPGQL QPAQGQGY PTSPQSGQ QGYYPTSPQ QSGGQGY PTSPQSGQ
641 QPGGQPR QGQGYYPIS PQSGGQT GQGQGYPT SPQSGGQ PRHEQPGW LQPGGQGY YPTSSQSGQ
721 GQSGGQG YPTSLWPG QGQPGQRQ GYDSPYHVA EYQAARLKA KAQLAAQLP AMCRLEGSDA LSASQ
```

B

Protein Coverage:

```
1  MAKRLVLF642FAA VVVALMALTA AE642GEASGQLQ CERELRKREL EAYQQVVDQQ LRDVSPGYRP ITVSPGTRQY EQQPVVPSKA
81  GSFY642PSETTP SQQLQQMIFW GIPALLRRYY PSVTSSQQGS YYPGQAF642PQQ SGQGGQPGQG QPGQRQDDQ QPGQGQQGY
161 PTSPQQPGQG QQLGQGQPGY YPTSQQPGQK QQAGQGQSG QGQRY642YPTS PQSGGQQP GQGQPGYPI SPQSE642WQQ
241 PGQGGQPGQG QSGGQGGQ QPGGQRPQG GQGYYPTSL QPGGQGSQ GQPGYYPTS SRPGWQQP GQGQPGQG
321 QGQPGQGQ PGQGQGYYP TSLQPGQG QPGGQPGY PTSPQQPGQG KPGGQQR642Y YPTSSQSGQ GQPGGQPG
401 YYPTSPQSG QGQSGQAQ GYYPTSPQS GQGQPGQRQ SGYFPTS642RQ SGQGGQPGQG QSGGQDDQ QPGQGQAYY
481 PTSSQSGQR RQAGWQRP GQPGYYPTS PQQPGEQQS GQAQSGQWQ LVYYPTSLQ PGQLQPAQG QPAQGQSA
561 QEQPGQAQ SGWQLVYYP TSPQPGQL QPAQGQGY PTSPQSGQ QGYYPTSPQ QSGGQGY PTSPQSGQ
641 QPGGQPR QGQGYYPIS PQSGGQT GQGQGYPT SPQSGGQ PRHEQPGW LQPGGQGY YPTSSQSGQ
721 GQSGGQG YPTSLWPG QGQPGQRQ GYDSPYHVA EYQAARLKA KAQLAAQLP AMCRLEGSDA LSASQ
```

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