

1 **Supplementary Table S1** Information of the wheat-allergic human sera samples

No.	PlasmaLab bleed number	Gender	Diagnosis	Wheat-specific IgE (kU/L) *
1	PL 27496	Female	Allergic rhinitis, food allergies	18.7
2	PL 24714	Female	Allergic rhinitis, food allergies	32.9
3	PL 24172	Female	Allergic rhinitis, food allergies	33.1
4	PL 26732	Male	Allergic rhinitis	10.7
5	PL 27419	Male	Allergic rhinitis	11.9

2 *Tested by the ImmunoCap® FEIA system against wheat.

3 **Supplementary Table S2 Processing parameters of three types of breads**

	Baked bread	Steamed bread	Baguette
Amount of yeast (g/100 g flour)	1	1	1.5
Visual appearance			
Dough piece weight (g)	55	50	100
Fermentation condition	38 °C, 70 min	38 °C, 40 min	38 °C, 90 min
Cooking parameters	Baked at 200 °C for 15 min	Steamed at 100 °C for 10 min	Baked at 185 °C for 25 min

5 **Supplementary Table S3 Inclusion and exclusion criteria for volunteers**

Inclusion criteria	Exclusion criteria
Aged between 18 and 24 years	Orthodontic appliances
Good general and dental health status	Deep caries
No history of salivary gland or masticatory system dysfunction	Removable dentures
	Periodontitis
	Oral ulcers
	Current use of any medication
	Food allergies or intolerances
	Smoking or regular alcohol consumption

8 **Supplementary Table S4** Physiochemical indexes of unstimulated saliva collected from
9 each volunteer

Volunteer	Flow rate (mL/min)	pH	Total protein ($\mu\text{g}/\mu\text{L}$)	MUC7 protein (ng/mL)	α - amylase activity (U/mL)
1	0.85	7.23	1.29	105.45	349.71
2	0.46	7.27	1.70	149.39	608.77
3	1.21	7.43	0.64	266.89	742.11
4	1.08	7.54	0.91	519.37	753.30
5	0.94	7.32	1.64	186.05	721.78
6	0.49	7.30	1.13	226.69	503.31
7	0.68	6.97	1.59	259.94	787.72
8	0.46	7.67	1.17	299.02	603.51
9	0.75	7.02	0.70	530.83	570.18
10	0.70	7.20	0.95	529.83	742.11

- 12 **Supplementary Table S5** Molecular weight of immunoreactive wheat protein bands in
- 13 saliva after oral processing of different breads*

Sample	MW (kDa)
BB-1	48, 95
BB-2	48
BB-3	32, 46
BB-5	21, 33, 46, 90
BB-6	47
BB-S-1	47
BB-S-6	32, 46, 95
BB-S-7	32, 48, 91, 239
BB-S-9	32, 46, 93
BB-S-10	47, 248
SB-1	32, 47
SB-4	32, 47
SB-5	45
SB-9	47
SB-10	47
BG-1	48
BG-3	47
BG-6	44, 48
BG-7	47, 239
BG-10	47, 73
BG-S-2	17, 32, 48
BG-S-5	32, 48

BG-S-7	33, 47
BG-S-9	32, 47

14 *Bands with IgE-reactivity were automatically detected by the Compass software included in
15 the Wes system. BB, baked bread; SB, steamed bread; BG, baguette; BB-S and BG-S are
16 baked bread and baguette added with shortening.

18 **Supplementary Table S6 Eigenvalues of principal components and loading factors**

19 Eigenvalues:

	F1	F2	F3	F4
Cell average area	0.359	-0.066	-0.028	0.150
Cell density	-0.318	0.142	0.205	0.028
Total Porosity	0.083	0.187	0.254	0.533
Crumb hardness	0.181	0.136	0.415	-0.006
Chewiness	0.283	-0.034	0.326	-0.011
Springiness	0.345	-0.053	0.170	0.082
Cohesiveness	0.235	-0.305	0.134	-0.182
Skin hardness	0.302	-0.006	-0.217	-0.290
Chewing time	-0.141	-0.392	-0.022	0.213
Average bite size	-0.283	-0.122	0.260	-0.211
Eating rate	-0.150	0.335	0.261	-0.075
Chews per bite	-0.209	-0.359	0.049	0.129
Chewing rate	0.020	0.439	-0.033	-0.125
Bolus moisture content	-0.210	-0.277	0.265	0.106
Saliva uptake	0.114	-0.200	-0.397	0.220
Bolus hardness	0.309	-0.080	0.119	-0.346
Bolus adhesiveness	0.227	-0.162	0.317	0.237
IgE-binding level	0.124	0.454	-0.197	0.268

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21 Loading factors:

	F1	F2	F3	F4
Cell average area	0.966	-0.148	-0.056	0.203

Cell density	-0.857	0.318	0.404	0.038
Total Porosity	0.223	0.419	0.501	0.723
Crumb hardness	0.486	0.305	0.819	-0.008
Chewiness	0.761	-0.075	0.644	-0.014
Springiness	0.928	-0.118	0.335	0.111
Cohesiveness	0.634	-0.683	0.265	-0.247
Skin hardness	0.813	-0.013	-0.429	-0.394
Chewing time	-0.380	-0.878	-0.043	0.289
Average bite size	-0.761	-0.273	0.514	-0.287
Eating rate	-0.405	0.749	0.515	-0.101
Chews per bite	-0.562	-0.802	0.097	0.175
Chewing rate	0.054	0.982	-0.064	-0.169
Bolus moisture content	-0.567	-0.620	0.523	0.143
Saliva uptake	0.307	-0.448	-0.785	0.299
Bolus hardness	0.832	-0.179	0.235	-0.469
Bolus adhesiveness	0.611	-0.363	0.626	0.321
IgE-binding level	0.333	0.616	-0.388	0.599

22 Values in bold are factor loadings with absolute values larger than 0.4.

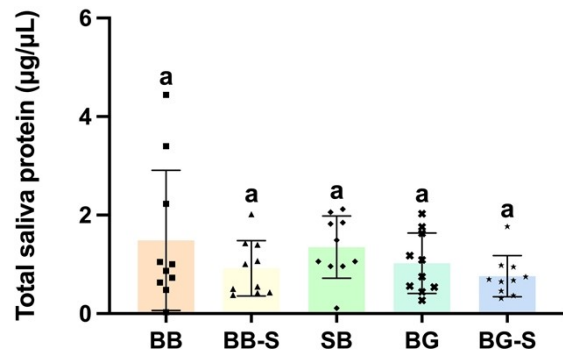
23 **Supplementary Table S7 LC-MS/MS identification of proteins in speculated bands*.**

24	Band	Accession No.	Protein name	Score	Sequence coverage (%)	No. of unique peptides	MW (kDa)	
25	3	P0DUB6	α -amylase 1A	285.71	38.4	19	57.767	*When
26								screeni

27 ng proteins, it is generally believed that the protein matched with unique peptides $\geq$ 2 and score $\geq$ 20 is relatively reliable, and the
 28 selected proteins are compared with the molecular weight of electrophoresis and mass spectrometry theory.

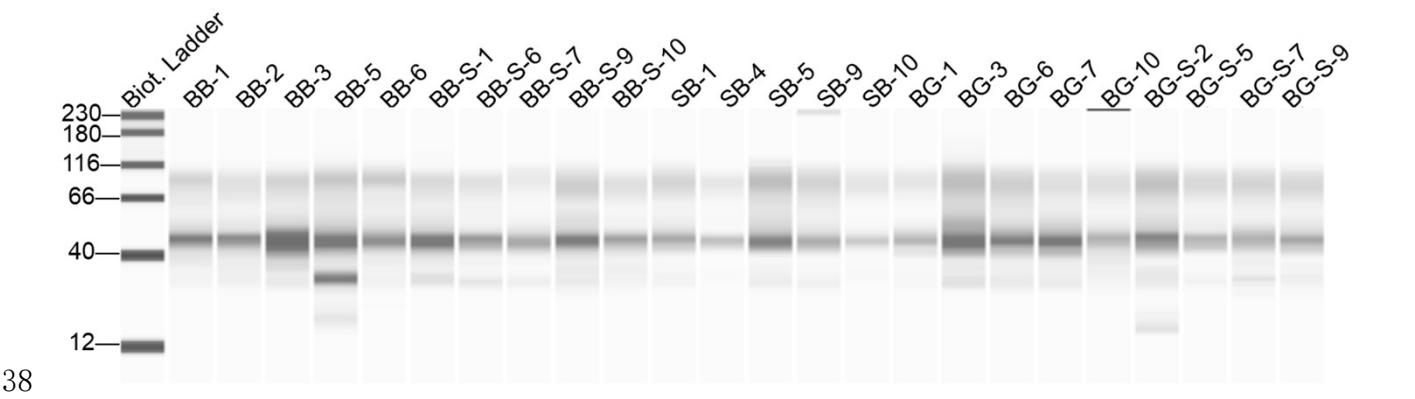
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30 **Supplementary Figure S1 Total protein content of saliva samples after consumption of**
31 **different breads**



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33 BB, baked bread; SB, steamed bread; BG, baguette; BB-S and BG-S are baked bread and
34 baguette added with shortening.

36 **Supplementary Figure S2 Full, uncropped digital images of the chemiluminescent**
37 **immunoassay outputs***



39 * The full dataset of all 25 samples and molecular weight markers (labeled in kDa) as
40 generated by the Compass software (ProteinSimple) without any cropping or alteration is
41 shown.

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