

Table S1. Assigned gluten results in commercial beers by three enzyme-Linked ImmunoSorbent Assays

Beer ID	Manufacturer	Yeast style	Ingredients	Gluten content mg/kg		
				R5 competitive	R5 direct	$\alpha$ 20gliadin competitive
Labelled GF_1	Industrial	Lager	Water, barley malt, corn, barley, hops	<10.0	<0.25	6.0
Labelled GF_2	Industrial	Lager	Natural mineral water, barley malt, hops	<10.0	<0.25	<3.6
Labelled GF_3	Industrial	Lager	Water, barley malt and hops	<10.0	<0.25	<3.6
Labelled GF_4	Industrial	Lager	Water, barley malt, oat, yuzu pasta, shichimi toragashi (sesame), hops and yeast.	30.2	1.5	6.8
Labelled GF_5	Craft	Ale	Water, barley malt, hops, yeast	<10.0	<0.25	<3.6
Labelled GF_6	Craft	Ale	Water, barley malt, hops and yeast	<10.0	<0.25	<3.6
Labelled GF_7	Industrial	Lager	Water, barley malt, corn, hops	<10.0	<0.25	<3.6
Labelled GF_8	Industrial	Lager	Water, barley malt, barley, corn, hops, hop extract	<10.0	<0.25	<3.6
Labelled GF_9	Craft	Lager	Barley malt, yeast, hops	<10.0	<0.25	<3.6
Labelled GF_10	Industrial	Ale	Water, barley malt, hops and yeast	<10.0	<0.25	<3.6
Labelled GF_11	Craft	Lager	Water, barley malt, oatmeal, hops, yeast	343	42.6	80.2
Labelled GF_12	Craft	Ale	Water, barley malt, hops, yeast	14	6.3	7.0
Labelled GF_13	Craft	Ale	Water, barley malt, hops, yeast	<10.0	<0.25	<3.6
Labelled GF_14	Industrial	Ale	Water, barley malt, oat malt, rice flakes, hops, spices, lactic acid, inverted cane sugar, yeast, ascorbic acid	<10.0	<0.25	<3.6
Labelled GF_15	Craft	Lager	Water, barley malt, hops	<10.0	<0.25	<3.6
Labelled GF_16	Industrial	Ale	Barley, wheat	<10.0	<0.25	<3.6
Labelled GF_17	Industrial	Ale	Water, barley, oatmeal, hops, yeast	58.8	9.7	4.6
Labelled GF_18	Craft	Ale	Water, barley malts, oat flakes, hops, yeast	<10.0	<0.25	<3.6
Labelled GF_19	Industrial	Ale	Barley, oatmeal, wheat, water, yeast and hops	<10.0	<0.25	<3.6
Labelled GF_20	Industrial	Ale	Water, barley/wheat malt, hops, yeast, spices	<10.0	<0.25	<3.6
Labelled GF_21	Industrial	Ale	Water, barley malt, hops, yeast, spices	<10.0	<0.25	<3.6
Labelled GF_22	Industrial	Lager	Water, barley malt, rice, hops	<10.0		
Labelled GF_23	Industrial	Lager	Water, barley malt, corn and hops	<10.0		
Labelled GF_24	Industrial	Lager	Water, barley malt, corn, hops	<10.0		
Labelled GF_25	Industrial	Lager	Water, barley malt, corn and hops	<10.0		
Labelled GF_26	Industrial	Lager	Water, barley malt, rice, maiz, hops	<10.0		
Labelled GF_27	Industrial	Ale	Water, malta, levadura, CO <sub>2</sub>	<10.0		

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Labelled GF _28	Industrial	Ale	Barley, oat	<10.0		
Labelled GF _29	Industrial	Lager	Water, barley malt, hop extract, hops	<10.0		
Labelled GF _30	Craft	Ale	Water, barley malt, hops and yeast	<10.0		
Labelled GF _31	Craft	Ale	Barley malt, millet, buckwheat, hops, yeast	<10.0		
Labelled GF _32	Industrial	Lager	Water, barley malt, rice, yeast and hops	<10.0		
Labelled GF _33	Industrial	Ale	Water, barley malt, rice, buckwheat, yeast, hops and spices	<10.0		
Labelled GF _34	Craft	Lager	Water, barley and rye malts, hops and yeast	<10.0		
Labelled GF _35	Craft	Ale	Water, barley malt, hops and yeast	<10.0		
Labelled GF _36	Craft	Ale	Water, malts, hops and yeast	11.8		
Labelled GF _37	Craft	Ale	Water, barley malt, hops and yeast	<10.0		
Labelled GF _38	Craft	Ale	Water, barley malt, hops and yeast	<10.0		
Labelled GF _39	Craft	Lager	*	<10.0		
Labelled GF _40	Craft	Ale	Water, barley malt, hops and yeast	<10.0		
Labelled GF _41	Industrial	Ale	Barley, oat, rye, buckwheat	<10.0		
Conventional _1	Industrial	Ale	Barley malt, wheat malt and wheat	60.6	15.4	164.2
Conventional _2	Industrial	Ale	Barley and wheat malt	55.0	7.6	39.6
Conventional _3	Industrial	Lager	Barley malt	32.0	1.6	12.7
Conventional _4	Craft	Ale	Water, barley malt, hops, yeast	65.8	8.9	22.1
Conventional _5	Industrial	Lager	Water, barley malt, hop extract	34.8	4.6	12.9
Conventional _6	Industrial	Lager	Water, barley malt, corn, hops	<10.0	<0.25	<3.6
Conventional _7	Industrial	Lager	Water, barley malt, corn, hops	41.2	6.2	12.8
Conventional _8	Industrial	Lager	Water, barley malt, corn, rice, hops	<10.0	<0.25	<3.6
Conventional _9	Craft	Lager	Water, barley malt, hops, yeast	37.0	7.3	18.3
Conventional _10	Industrial	Lager	Water, malta barley, corn, hops, yeast	114.2	20.3	37.9
Conventional _11	Industrial	Lager	Water, barley malt, maltose, hop extract	35.0	4.7	8.9
Conventional _12	Craft	Ale	Water, barley and wheat malt, hops, yeast	100.8	26.8	107.2
Conventional _13	Craft	Ale	Water, barley malts, hops, yeast	26.8	1.0	7.7
Conventional _14	Industrial	Lager	Water, barley malt, hops, hop extract	63.4	9.5	19.0
Conventional _15	Industrial	Lager	Water, barley malt, corn, hop extract	63.8	6.3	13.8

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Conventional_16	Industrial	Lager	Water, barley malt, corn, barley, hops	<10.0	<0.25	4.4
Conventional_17	Industrial	Ale	Water, wheat malt, barley malt, hop extract	1169.8	90.0	1327.2
Conventional_18	Industrial	Ale	Water, barley malt, glucose syrup, wheat malt, aromatic caramel, hops	148.8	54.0	238.6
Conventional_19	Industrial	Ale	Water, wheat malt, barley malt, yeast, hops	3716.6	503.8	1881.0
Conventional_20	Industrial	Lager	Water, barley malt, treated hops, hop extract	43.4	5.9	25.6
Conventional_21	Industrial	Lager	Water, barley malt, corn, hops	60.4	10.0	21.7
Conventional_22	Craft	Ale	Barley malta; wheat flakes, cande sugar, dextrose, hops, yeast	160.8	49.9	74.6
Conventional_23	Craft	Ale	Barley malta; oat malt, hops, dextrose, yeast	80	14.8	11.9
Conventional_24	Industrial	Lager	Barley malt	25.2	2.5	5.0
Conventional_25	Industrial	Lager	Barley malt	17.6	5.0	3.6
Conventional_26	Craft	Ale	Water, barley malt, hops, yeast	67.8	19.1	26.7
Conventional_27	Industrial	Ale	Water, wheat and barley malt, hops, yeast	1241	151.1	762.2
Conventional_28	Industrial	Ale	Water, barley malt, hops, yeast	31.6	4.8	15.2
Conventional_29	Industrial	Lager	Water, 2 barley malts, 1 wheat malt, 4 varieties of hops, yeast	248	108.7	439.2
Conventional_30	Industrial	Ale	Water, 3 barley malts, 1 wheat malt, 4 varieties of hops, yeast	1036.8	78.0	757.2
Conventional_31	Industrial	Lager	Water, two barley malts, 1 wheat malt, 4 varieties of hops, yeast	628.4	83.2	515.8
Conventional_32	Industrial	Lager	Water, barley malt, hops, hop extract	26.8	4.3	19.0
Conventional_33	Industrial	Lager	Water, barley malt, rice, corn, hops	<10.0	<0.25	<3.6
Conventional_34	Craft	Ale	Water, barley malt, hops, yeast	<10.0	<0.25	7.2
Conventional_35	Craft	Ale	Water, barley malt, hops, yeast	23.6	2.2	7.0
Conventional_36	Industrial	Lager	Water, barley malt, hops, hop extract	38.0	10.2	19.4
Conventional_37	Industrial	Ale	Barley and wheat malt	2192.4	278.2	828.0
Conventional_38	Industrial	Ale	Water, wheat malt, barley malt, hop extract, yeast	3171.4	434.4	1885.4
Conventional_39	Craft	Ale	Water, hops, yeast, barley malta	40.8	9.2	11.6
Conventional_40	Craft	Ale	Water, hops, yeast, wheat malt, barley malt	1363.2	166.4	1219.6
Conventional_41	Craft	Ale	Water, hops, yeast, barley malt	111.4	14.0	33.0
Conventional_42	Industrial	Ale	Water, barley malt, sugar, hops	51.8	16.3	23.5
Conventional_43	Industrial	Ale	Water, barley malt, sugar, spices (orange peel, coriander seeds), hops	120.8	41.8	81.3
Conventional_44	Industrial	Lager	Water, barley malt, treated hops, hop extract	23.8	5.4	18.3
Conventional_45	Craft	Ale	Water, barley malt, hops, yeast	33.4	5.3	11.8

Beer ID	Manufacturer	Yeast style	Ingredients	Gluten content mg/kg		
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Conventional_46	Industrial	Lager	Barley and barley malt	61.8	8.9	32.2
Conventional_47	Craft	Ale	Water, barley malt, hops, yeast	44.8	5.0	24.2
Conventional_48	Industrial	Ale	Water, barley malt, wheat malt, hops, yeast	245.2	94.8	745.6
Conventional_49	Industrial	Ale	Barley, wheat and oatmeal. Orange peel, coriander	2773.6	391.8	1558.0
Conventional_50	Craft	Ale	Barley malt	65.8	11.3	39.0
Conventional_51	Industrial	Lager	Water, barley malt, corn, barley, hops, coloring E-150c, stabilizer E-405	<10.0		
Conventional_52	Industrial	Lager	Water, barley malt, rice, hops	<10.0		
Conventional_53	Industrial	Ale	Water, barley and wheat malt, hops and yeast	2039.6		
Conventional_54	Craft	Lager	Water, barley malt, hops and yeast	<10.0		
Conventional_55	Industrial	Lager	Water, barley malt, hops	<10.0		
Conventional_56	Craft	Ale	Water, barley malt, hops and yeast	31.0		
Conventional_57	Industrial	Lager	Water, barley malt, corn, hops	16.4		
Conventional_58	Industrial	Ale	Water, wheat malt, barley malt, hops and yeast	2754.2		
Conventional_59	Industrial	Lager	Water, barley malt, rice, hops	< 10.0		
Conventional_60	Craft	Ale	Water, barley malt, hops and yeast	10.0		
Conventional_61	Craft	Ale	Water, barley malt, hops and yeast	40.2		
Conventional_62	Craft	Ale	Water, barley malt, wheat malt, orange peel, coriander, hops and yeast	234.4		
Conventional_63	Industrial	Ale	Water, malt (Maris Otter), hops (Cascade and Simcoe), malted wheat and yeast (Ale)	< 10.0		
Conventional_64	Industrial	Ale	Water, malt (Extra Pale), hops (Cascade and Mosaic) and yeast (Ale)	< 10.0		
Conventional_65	Craft	Ale	Water, malt, hops, yeast, caramel	62.4		

GF: gluten free. \*The manufacturer does not provide raw materials on the label.