

TECHNOLOGY TO PRODUCE GLUTEN-FREE BARLEY MALT BEERS

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Malting and brewing processes remove much of the proteins in the traditional grist to generate amino acids for yeast metabolism and to minimize the risks of colloidal instability of the beer. The question is whether gluten and the relevant celiac-inducing peptide sequences of hordein can be sufficiently eliminated to obtain gluten-free beers. The test kits used for the gluten and celiac-toxic peptide analysis are: Sandwich ELISA-RIDASCREEN Gliadin for gluten analysis R7001 and Competitive ELISA-RIDASCREEN Gliadin for celiac-toxic peptide analysis R7011 and/or R7021. The standards for the gluten estimation are Prolamin Working Group (PWG) reference material. The gluten content of the examined malt beers is beneath the quantitative detection limit (5 ppm) to 101 ppm as determined with the Sandwich ELISA-Ridascreen Gliadin kit for gluten proteins. 45 of the 58 examined beers are then gluten-free (< 20 ppm gluten). This corresponds with 26 different breweries producing these beers. When using the Competitive ELISA-Ridascreen Gliadin kits only a small part of these 'gluten-free' beers will still be gluten-free as the Competitive ELISA kit analyzes for the toxic gluten peptides. Preliminary lab scale brewing experiments (60 Liter pilot brewery) and two industrial brewing case studies revealed that the gluten content in the final beer can clearly be diminished by either using prolyl endopeptidase and/or tannins during the brewing processes. Even 100% barley malt beers can obtain final gluten and toxic gluten peptides content lower than the threshold for food products to be declared 'gluten-free'.

Keywords: Gluten-free, malt beer, processing

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