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Efficiency of commercial enzymatic preparations in grain hydrolysis for preparation of substrates for beer fermentation

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The chemical composition of malt is of crucial importance for wort quality and together with conditions of fermentation process, they determine beer quality. Commercial enzymes preparations compensate enzymes naturally present in the malt. As substitutes for malt, originally made from malted barley, we used corn grits, rice and unmalted barley mixtures as adjunct for wort, and *Ceremix* and *Termamil* enzyme preparations (microbial origin). Wort quality was monitored by following parameters: filterability speed, α-amino-nitrogen, total sugars, and degree of saccharification. Beer quality is assessed, beside usual parameters, by presence and levels of highly volatile alcohol and esters, such as 3-methyl butanol, 1-propanol, phenyl ethanol and ethyl acetate that dictate flavour and taste of beer. Higher values of these substances were found in all samples of wort supplemented with enzymes, in comparison with those without adding of *Termamyl* and *Ceremix*. Although these preparations increase efficiency of saccarification process, their usage concomitantly with enzymes from malt leads to elevation of substances that negatively contribute to beer flavour and taste. Addition of these enzyme preparations meets requests for good beer quality wherever enzymes from malt are not present in sufficient quantity. For optimal results 0.5% of *Termamyl* and *Ceremix* should be added, while in all other cases where malted substance is present with at least 50%, their usage should be strictly controlled.