Influence of mashing temperature on Arabinoxylan hydrolysis

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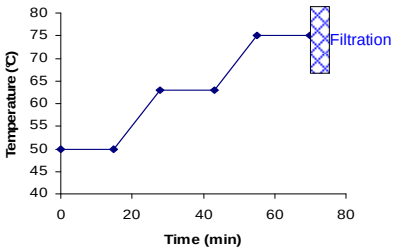
INTRODUCTION

Beta-glucans (BG) and Arabinoxylans (AX) are major constituents of both aleurone and starchy endosperm cell walls of barley. The impact of BG on brewing process and beer quality has been well studied. Whereas BG are strongly decreased during malting, it is known that the AX content of malt is quite the same as in barley (1). The purpose of this work is to study the influence of mashing temperature on AX content and viscosity of wort.

TEPRAL FILTRATION SYSTEM

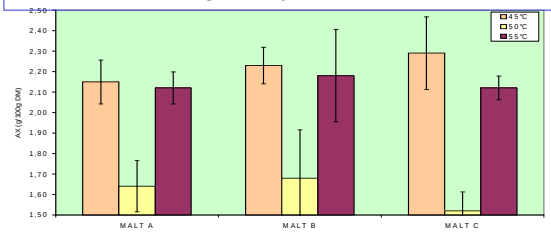
- **Computerized mashing system**
  - **57 g fine gring & 200 ml water**
  - **Mash-in temperature : 50°C (15 min)**
  - **Rests temperatures : 63 & 75°C (15 min)**
  - **Mash filtration speed (1 bar pressure)**
  - **Sparging with 200 ml water at 75°C**
  - **Sparging filtration speed (1.5 bar pressure)**



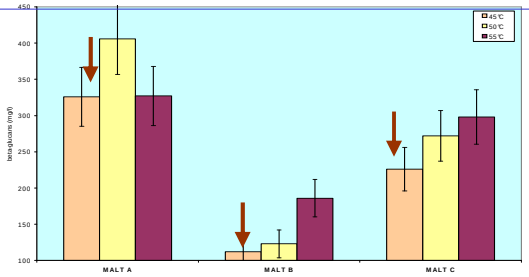
DATA COLLECTION & RESULTS

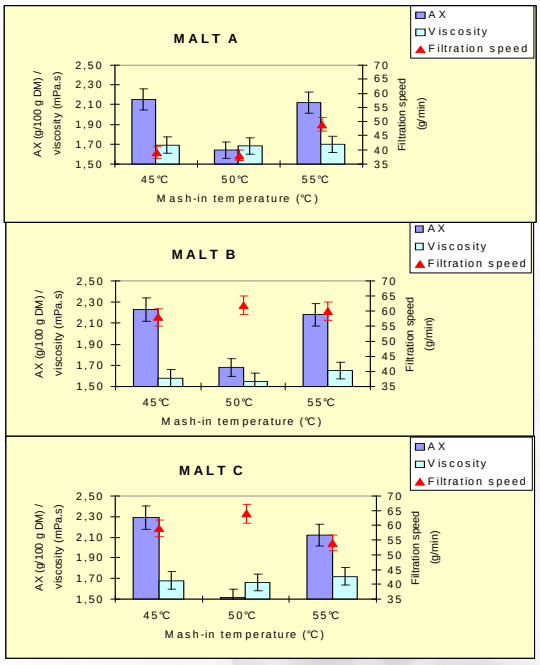
MALT A : 2RWB from 600 kg pilot malting
MALT B : 2RSB from 600 kg pilot malting
MALT C : 2RSB industrial malt
Mash-in temperature tested : 45, 50 and 55°C

Influence of mashing-in temperature on **AX** content of wort



Influence of mashing-in temperature on **BG** content of wort





CONCLUSION

AX content of wort is strongly decreased at 50°C mash-in temperature. For BG, the optimum temperature is 45°C. Wort viscosity is higher for the 55°C mash-in temperature. It has been reported that wort viscosity is linked with its content of solubles BG and AX and that endo-xylanases are desactivated very rapidly at temperature above 55°C (2).
AX are not degraded during malting. They only can be hydrolysed during mashing. Brewers should also take care of the temperature used during mashing process. AX nature and composition of spent grains (solubles or unsolubles) should also play a major rule in mash filtration.

(1) : Ouarnier et al., 31st EBC Congress, (2007).
(2) : Li et al., *Food Chem.*, 90 (2005) 101-108.

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