

Effect of breed on expression of stearoyl-CoA desaturase protein in muscle and subcutaneous adipose tissue of beef cattle

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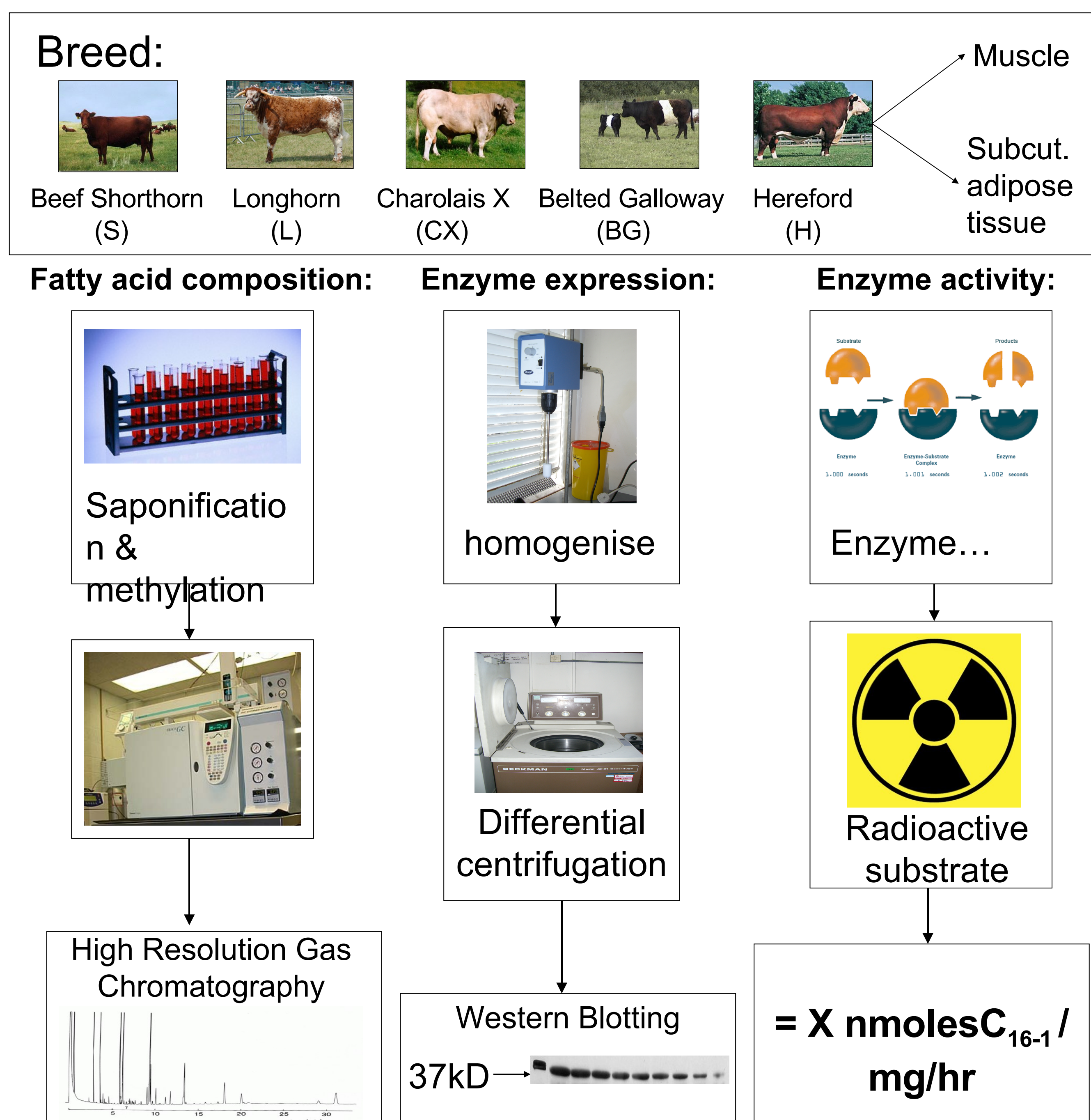
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Introduction

- **Stearoyl CoA desaturase (SCD)** is a key lipogenic enzyme.
- SCD catalyses two types of reaction: the tissue biosynthesis of health beneficial **monounsaturated fatty acids (MUFA)** and **9-cis, 11-trans conjugated linoleic acid (CLA)**.
- SCD protein expression *positively* correlates with intramuscular fat in pigs (but not with subcutaneous fat).
- The input of SCD in fat formation in cattle is unclear.
- The aim of this research was to investigate SCD protein **expression** and **activity** in muscle and subcutaneous adipose tissue and the **fatty acid composition** in five breeds of beef cattle.

Methodology



Results

Figure 1: SCD protein expression in a) muscle, b) subcutaneous adipose tissue

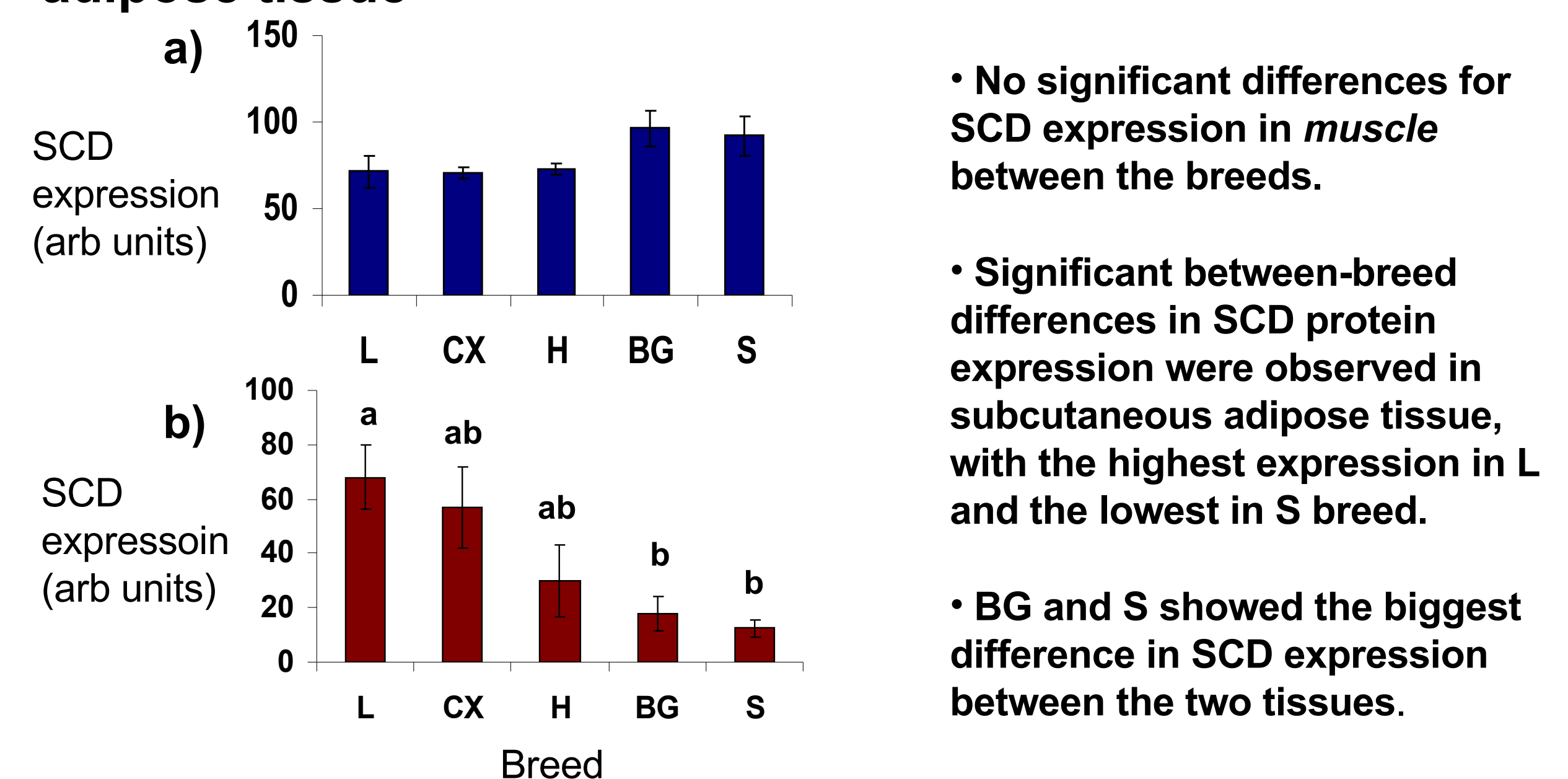


Figure 2: SCD protein activity in a) muscle, b) subcutaneous adipose tissue

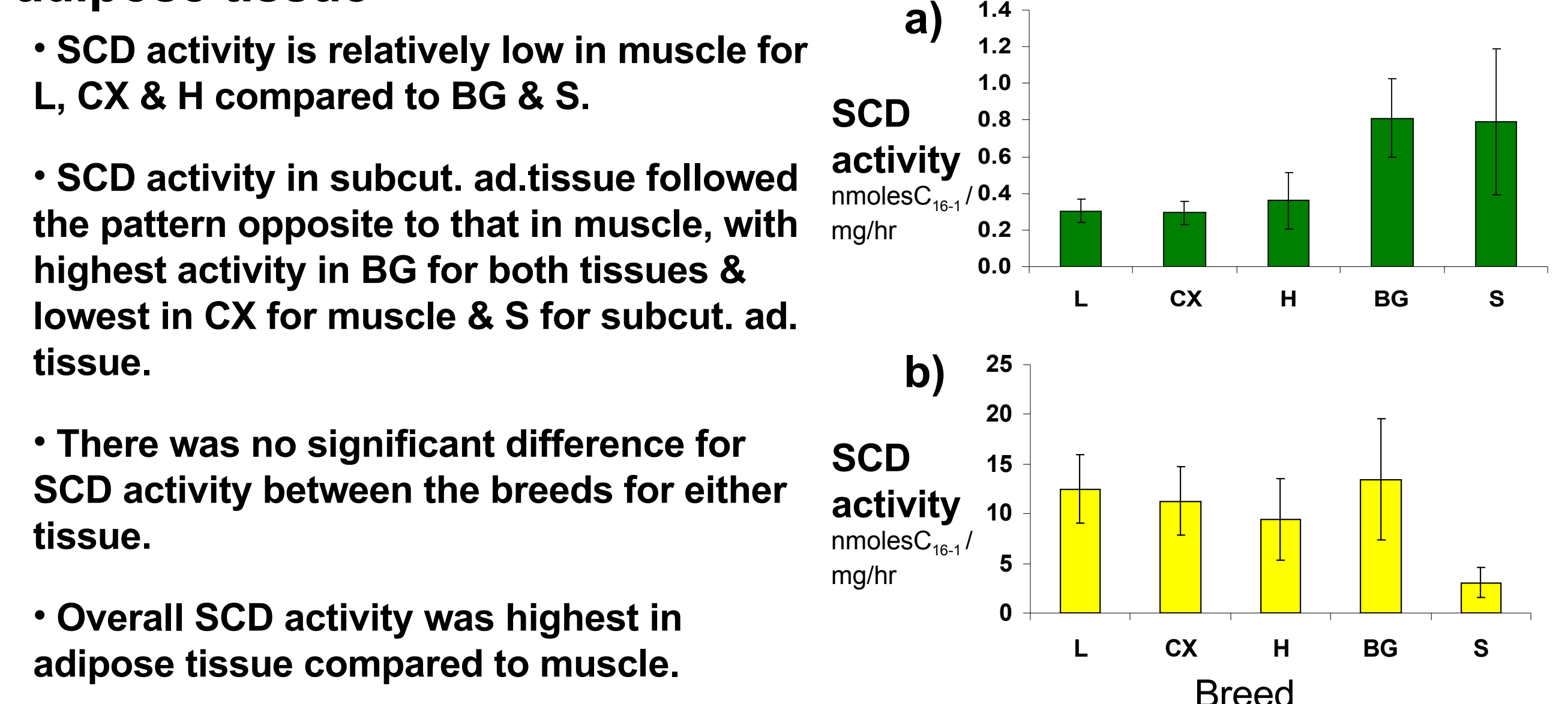
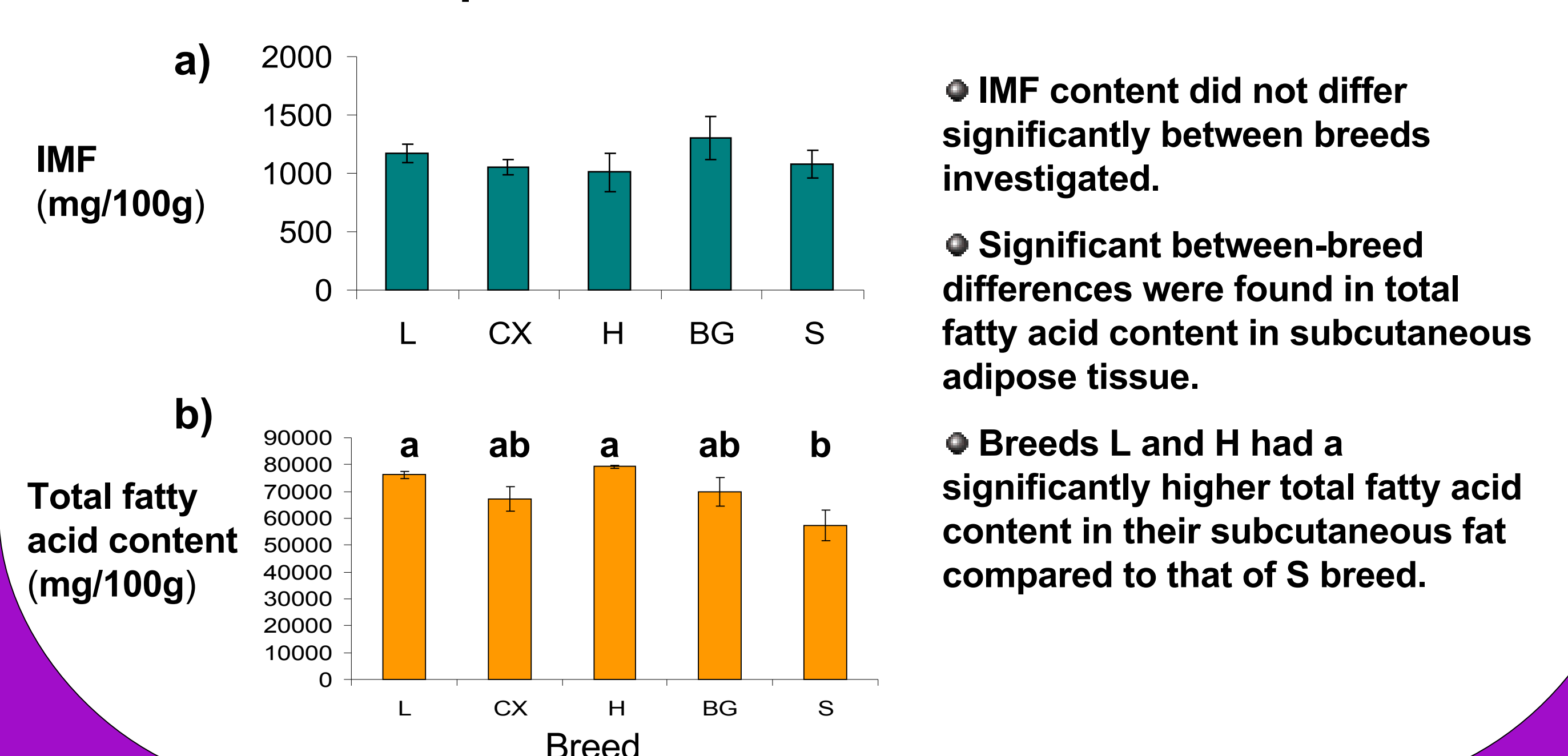


Figure 3: Fatty acid composition of a) intramuscular fat and b) subcutaneous adipose tissue



Conclusions

- SCD protein expression pattern in muscle of different cattle breeds followed the opposite direction to the SCD expression pattern in subcutaneous adipose tissue. It is suggested that the mechanisms regulating SCD expression in ruminants are tissue-specific.
- Between breed differences in SCD activity were essentially following the same pattern as the SCD protein expression. The differences in SCD activity were not significant due to large variations between individual animals and a relatively low number of animals within each group.
- Variations in SCD protein expression and activity between breeds did not appear to be related to total fatty acid content in either tissue.
- It is suggested that in contrast to pigs, the role of SCD in IMF formation and subcutaneous adipose tissue content is limited.

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