



Muscle Proteins Analysis by SDS-PAGE

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OBJECTIVES

- Optimization of protocols for tissue extraction and gel analysis: influence of detergent type and protein concentration
- Changes of protein profile after frozen treatment at different times
- Identification of some protein by MALDI-TOF MS

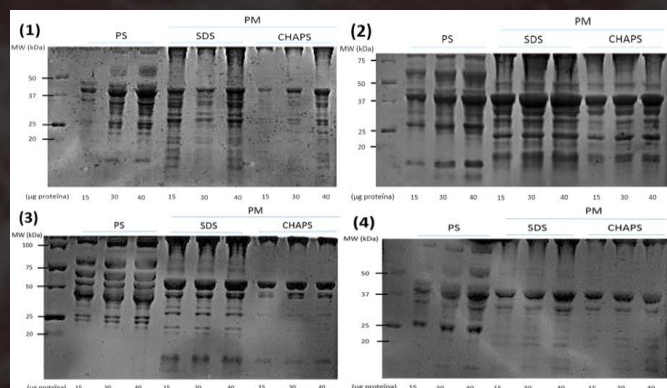


Figure 1. Influence of the amount of protein and detergent type on the 1D gel electrophoresis of sarcoplasmic and myofibrillar proteins isolated from (1) beef, (2) lamb, (3) chicken and (4) pork

CONCLUSIONS

- SDS is more efficient than CHAPS for protein extraction. Low protein concentration run in gel is better for a correct lecture of bands
- The presence or absence of some bands is useful to discriminate species from different family
- The exposure of meat at room temperature before freezing does not modify the global profile of proteins
- MS techniques are helpful for an accurate identification of proteins

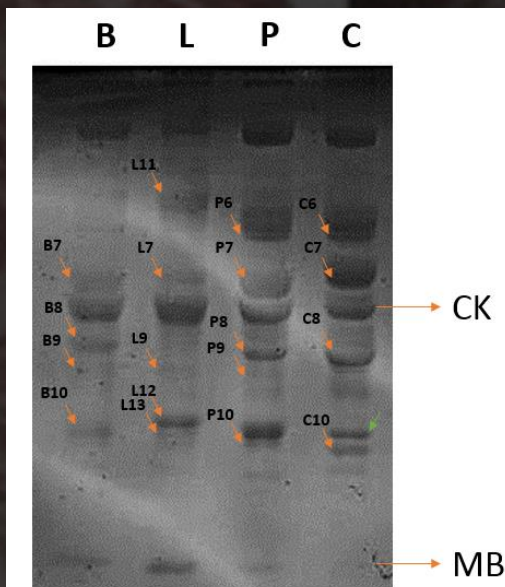


Figure 2. 1D gel electrophoresis of sarcoplasmic proteins isolated from (B) beef, (L) lamb, (C) chicken and (P) pork

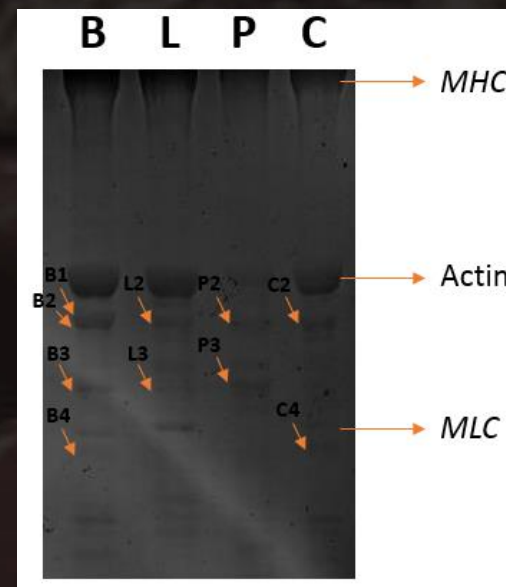


Figure 3. 1D gel electrophoresis of myofibrillar proteins isolated from (B) beef, (L) lamb, (C) chicken and (P) pork

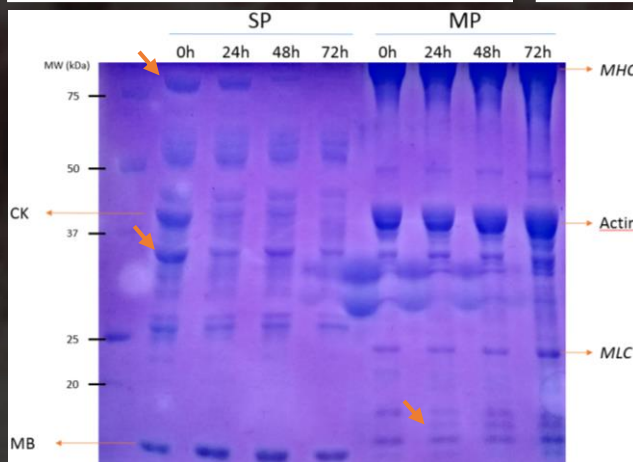


Figure 4. 1D gel electrophoresis of sarcoplasmic and myofibrillar proteins isolated from beef at room temperature

RESULTS

- SDS yields more protein bands than CHAPS in MP
- For sarcoplasmic proteins:
 - One band only appears in chicken
 - Enolase 3, LDH and TFI have different electrophoretic mobility between species
 - CA3 only appears in type I fibers (red muscle)
- For myofibrillar proteins:
 - In chicken, only appears TM I
- CK & LDH → less concentration when freezing is later
- One high molecular weight band decrease with time in SP
- In MP, one low MW band increase with time

Table 1. List of protein identified by MALDI-TOF MS

Sample ID	Protein Description	MOWSE (score)	Molecular weight (Da)
<i>Bos taurus</i>	Glycogen phosphorylase	547	97688