

## Medical > In Vivo > Small animal research

# 2

**A high rigor temperature, not sarcomere length, determines light scattering properties and muscle colour in beef M. sternomandibularis meat and muscle fibres.**

*Hughes J, Clarke F, Purslow P, Warner R.; Meat Sci. 2018 May 18;145:1-8. doi: 10.1016/j.meatsci.2018.05.011.*

### **ABSTRACT**

Beef meat colour is impacted by both myoglobin status and the light scattering properties of the muscle, and the specific causative scattering elements of the latter are still unknown. We hypothesize that stretching muscles during rigor will generate a structure which favours light scattering, by increasing the length of the I-band (longer sarcomeres) and that a high rigor temperature will cause protein reconfiguration, changing the muscle structure and promoting light scattering. Muscle fibre fragments were isolated from four beef M. sternomandibularis and subjected to stretching (plus, minus) and three incubation temperatures (5, 15, 35°C). Reflectance confocal laser scanning microscopy (rCLSM) revealed sarcomere stretching alone was not solely responsible for light scattering development. A high rigor temperature (35°C) was more favourable for light scattering. Stretching and taking muscle into rigor at 35°C promoted transverse shrinkage of muscle fibres and increased light scattering and could be applied post-mortem (PM) to reduce the occurrence of problematic dark meat. **KEYWORDS:** Meat colour; Muscle fibre; Reflection confocal laser scanning microscopy (rCLSM); Rigor temperature; Sarcomere length; Skeletal muscle structure PMID: 29859419 DOI: 10.1016/j.meatsci.2018.05.011