Acid red 1 dye absorption by wool found to not be heritable for wool pre-treated with a chlorination process

Summary

This study tested the hypothesis that there is significant genotypic variation in the absorption of acid red 1 dye between wool from progeny of different sires after undergoing a chlorination process, and as such, potential for dye uptake is heritable after chlorination. 1441 mid side wool samples from progeny of 84 different sires were tested for absorption of acid red 1 dye using a spectrophotometer read at 520nm following a chlorination process with dichloroisocyanurate. Any obvious outliers were removed from the analysis as well. There appeared to be no significant differences in acid red 1 absorption after chlorination between progeny of different sires. The results rejected our hypothesis, suggesting that potential for dye absorption by wool after chlorination is unlikely to be heritable (0.035 ± 0.0387). These results imply that the genetic variation in dyeability can be found in a component of the wool, most likely lipids found at intercellular junctions of cuticles which act as a barrier to dye entry, which is removed or disrupted after chlorination.