

Abstract Submitted
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Mechanical response of porcine skin under compression from low to high strain rates¹ CHIARA BO, Institute of Shock Physics, Imperial College London, BEN J. BUTLER, SMF Group, Cavendish Laboratory, Department of Physics, University of Cambridge, ALUN WILLIAMS, Department of Veterinary Medicine, University of Cambridge, KATHERINE A. BROWN, SMF Group, Cavendish Laboratory, Department of Physics, University of Cambridge, WILLIAM G. PROUD, Institute of Shock Physics, Imperial College London — Uniaxial compression experiments were performed on fresh porcine skin samples at different strain rates to study the stress-strain response. Low strain rate experiments were performed with an Instron 5566, while high strain rates were achieved using a Split Hopkinson Pressure Bar system. Magnesium bars and semiconductor strain gauges were used respectively to maximize the signal transmission from porcine skin to the output bar and to allow the signal measurement. Skin samples were harvested from different area of the animal to investigate the heterogeneity of such material. The experimental results showed that the mechanical response of skin in compression is strongly dependent on the strain rate of loading and on the location from which the samples were collected. Specimens collected from the rump showed a stiffer response compared to samples harvested from the thigh. Finally, a histological analysis of the samples post compression was carried out to examine the extent of tissue damage as a function of strain rate.

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