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Abstract
Soft tissues such as brain, liver, kidney, etc. are very vulnerable to trauma during car crash and other impact consequences, but mechanical properties of these soft tissues, which do not bear force, have not been investigated as completely as mechanical properties of load-bearing soft tissues such as ligament, tendon, articular cartilage, etc. The growing requirements of automotive safety regulation need examination of the mechanical properties of these soft tissues. The accurate models of these soft tissues are the perquisites for injury simulation and designing methods for injury prevention. Furthermore, recent developments in surgical robotic technology as well as advances in virtual reality techniques necessitate closer investigation of the mechanical properties of these tissues. The development of these technology and techniques, for these soft tissues, is highly dependent on the knowledge of mechanical properties of these tissues and the availability of proper mathematical models of these tissues. The aforementioned reasons make the research about mechanical properties of soft tissues, which not bear load, join the main stream of research in biomechanics. There are two approaches to the study of mechanical properties of materials: strength of materials approach and fracture mechanics approach. However, an exploratory literature search shows that fracture mechanics study of these tissues is relatively less if compared with the strength of materials study of these materials. The objective of this research is to investigate fracture properties of these soft tissues. Pig kidney cortex was used as soft tissue material for this study.
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