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## **Detecting Deep Tissue Injury using Serum and Urine Biomarker in a Rat Model**

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### **ABSTRACT:**

The study investigated the critical changes of the serum and urine biomarkers associated with the tissue damage in pressure induced deep tissue injury (DTI) in spinal cord injury (SCI) condition on rats. The concentrations of myoglobin and H-FABP were tested from blood and urine samples collected before and at several time points within 7 days after the hindlegs were compressed. It was found that myoglobin elevated dramatically from  $33.8 \pm 53.4$  ng/mL to  $1132.3 \pm 59.3$  ng/mL and from  $1.7 \pm 0.7$  ng/mL to  $574.0 \pm 522.2$  ng/mL in serum and urine, respectively, within 24 hours post-compression and returned to baseline after 48 hours. Serum H-FABP rose from  $0.78 \pm 0.55$  ng/mL to  $43.91 \pm 10.8$  ng/mL. The peak value of these markers occurred at 24 to 72 hours post compression. Histological analysis and MRI imaging confirmed the massive muscle injury introduced by the compression. These preliminary results suggest that the tested biomarkers may have future clinical value to sense the formation of DTI in SCI population.

### **Key words:**

Biomarker; Myoglobin; H-FABP; Spinal Cord Injury; Deep Tissue Injury; Blood; urine.

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