

## **ADCOR © Muscle Damage Rapid Detection Test Based on Skeletal Troponin I Immunochromatography Reaction**

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**Abstract :** High dose activity without any pre-exercise will impact Delayed Onset Muscle Soreness (DOMS). DOMS known as delayed pain post-exercise and induce skeletal injury which will decrease athletes' performances. From now on, post-exercise muscle damage can be detected by measuring skeletal troponin I (sTnI) concentration in serum using ELISA but this method needs more time and cost. To prevent decreased athletes performances, screening need to be done rapidly. We want to introduce our new prototype to detect DOMS acutely. Rapid detection tests are based on immunological reaction between skeletal troponin I antibodies and sTnI in human serum or whole blood. Chemical methods that are used in the manufacture of diagnostic test is lateral flow immunoassay. The material used is rat monoclonal antibody sTnI, colloidal gold, anti-mouse IgG, nitrocellulose membrane, conjugate pad, sample pad, wick and backing card. The procedure are made conjugate (colloidal gold and mAb sTnI) and insert into the conjugate pad, gives spray sTnI mAb and anti-mouse IgG into nitrocellulose membrane, and assemble RDT. RDT had been evaluated by measuring the sensitivity of positive human serum (n = 30) and negative human serum (n = 30). Overall sensitivity value was 93% and specificity value was 90%. ADCOR as the first rapid detection test qualitatively showed antigen-antibody reaction and showed good overall performances for screening of muscle damage. Furthermore, these finding still need more improvements to get best results.

**Keywords :** DOMS, sTnI, rapid detection test, ELISA

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