

The product cannot be used for diagnostic nor any medical purpose.

# N-Titin

**Titin** (connectin) is a protein that consists of 34,350 amino-acid (3,816kDa) and specifically expresses in a cross-striated muscle. Titin has been known as the largest protein among of existing proteins in a living body. It has been researched in the field of muscular damages such as sports medicine, cardiac disease, NAFLD, sarcopenia and frailty etc.

## ELISA

[#27900 Human Titin N-Fragment \(Urine\) ELISA Kit - IBL](#)

[#27602 Mouse Titin N-Fragment \(Urine\) ELISA Kit - IBL](#)

\* Measuring Samples : Urine

\* Measurement Range : 46.88 - 3,000 pmol/L (Human)  
75 - 4,800 pmol/L (Mouse)

## Antibody

[#10423 Anti-Titin-N \(53A1\) Mouse IgG MoAb](#)

[#10425 Anti-Titin-N \(144A2\) Mouse IgG MoAb](#)

\* Volume : 100µg

\* Specificity : Human Titin N-Fragment specific

\* Application : ELISA

## Sarcopenia with NAFLD

**Sarcopenia** is a progressive and systemic loss of skeletal muscle mass and decreased muscle strength.

**NAFLD** (Non-Alcoholic Fatty Liver Disease) is a disease where there is accumulation of excess fat in the liver (fatty liver) of people who drink little or no alcohol.

A relationship between decreased skeletal muscle mass and the worsening of life prognosis in chronic liver disease, in hepatocellular carcinoma has recently been reported.

It has been also reported that decreased muscle mass is a risk for developing **NAFLD (Non-Alcoholic Fatty Liver Disease)** and **liver fibrosis** in NAFLD patients, and increased muscle mass is associated with improvement of NAFLD pathological conditions.

- ✓ Aging
- ✓ Decreased Muscle Mass
- ✓ NAFLD
- ✓ Progression of Liver Fibrosis



**Elevating  
Titin in Urine**

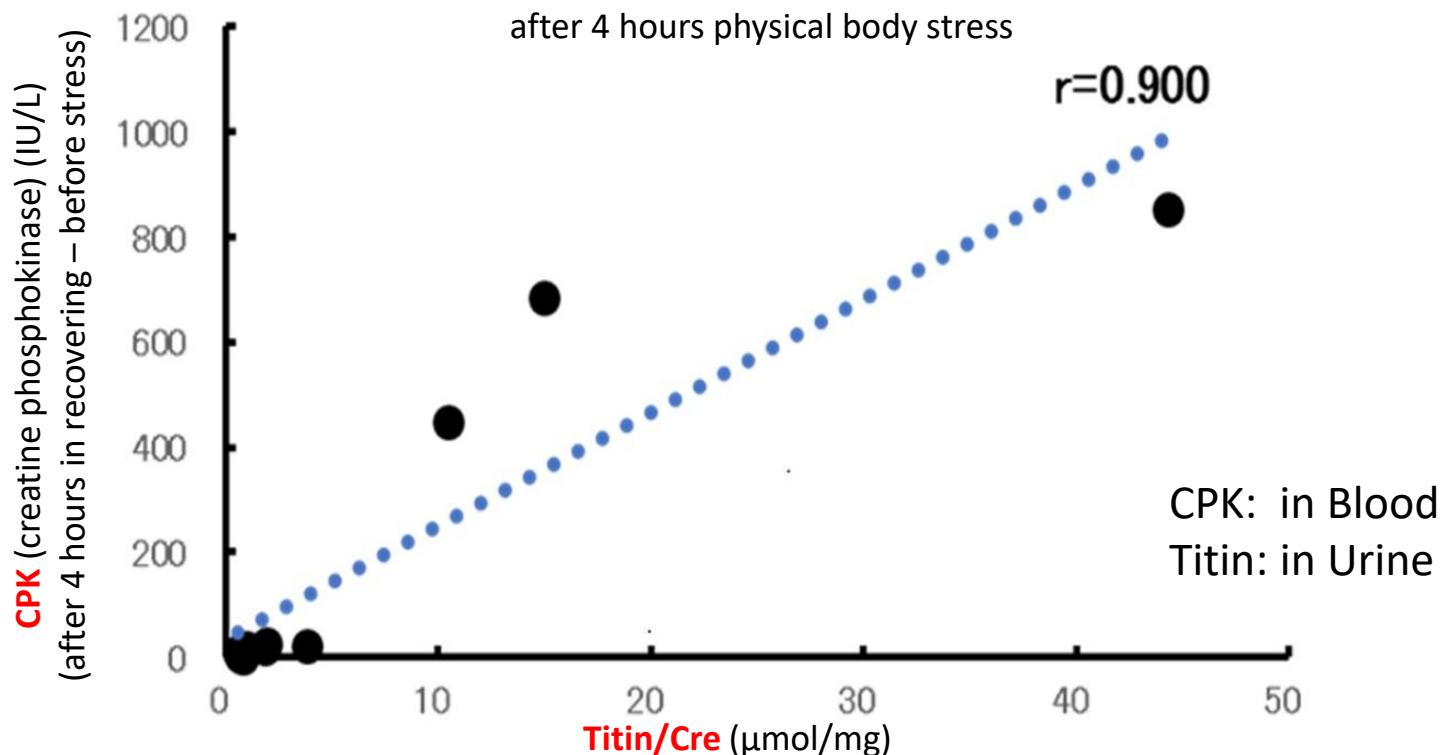
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### Good Correlation

### (CPK vs Titin-N fragment)

Comparison between CPK (Blood) and Titin-N (Urine) after 4 hours physical body stress



(after 4 hours in recovering – 4 hours in stress) Data provided by: Soiken Inc.

This data suggests the potential that Urine Titin N-fragment can be a **non-invasive substitute** to CPK in blood for **monitoring muscle damage**.

#### References:

NAFLD	<a href="#">Urinary Levels of Titin-N Fragment, a Skeletal Muscle Damage Marker, are Increased in Subjects with Nonalcoholic Fatty Liver Disease. Oshida N et al. Sci Rep. 2019 Dec 20;9(1):19498.</a>
Cardiac disease	<a href="#">Urinary Titin Is Increased in Patients After Cardiac Surgery. Tanihata J et al. Front Cardiovasc Med. 2019 Feb 8;6:7. Usefulness of Urinary N-Terminal Fragment of Titin to Predict Mortality in Dilated Cardiomyopathy. Yoshihisa A et al. Am J Cardiol. 2018 Feb 12. pii: S0002-9149(18)30192-9.</a>
Sports Medicine	<a href="#">Changes in Urinary Titin N-terminal Fragment Concentration after Concentric and Eccentric Exercise. Yamaguchi S et al. J Sports Sci Med. 2020 Feb 24;19(1):121-129. eCollection 2020 Mar. Changes in urinary titin N-terminal fragments as a biomarker of exercise-induced muscle damage in the repeated bout effect. Yamaguchi S et al. J Sci Med Sport. 2019 Dec 23. pii: S1440-2440(19)31246-0</a>
Cancer	<a href="#">Urinary titin N-terminal fragment concentration is an indicator of preoperative sarcopenia and nutritional status in patients with gastrointestinal tract and hepatobiliary pancreatic malignancies. Miyoshi K et al. Nutrition. Nov-Dec 2020;79-80:110957.</a>
Myopathy	<a href="#">Urine Titin N-fragment as a Biomarker of Muscle Injury for Critical Illness Myopathy. Nakano H et al. Am J Respir Crit Care Med. 2020 Oct 8.</a>

[More References](#)

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