

T50[®] TEST

CALCIFICATION-RELATED
CARDIOVASCULAR RISK

RESEARCHER INFO



calciscon
CALCIFICATION PROPENSITY DIAGNOSTICS

T50 ASSESSES CALCIFICATION-RELATED CARDIOVASCULAR (CV) RISK

- Strong relation with CV prognosis in multiple diseases and conditions
- Functional insight into the physiological *mineral buffer system*
- Association with vascular calcifications, oxidative stress, inflammation

Ectopic calcification is an increasingly recognized major non-traditional CV risk factor¹. T50 is the first-in-class blood test measuring calcification propensity², which reflects calcification-related CV risk.

Therefore, T50 is increasingly used in CV research.

TAKE ADVANTAGE OF T50 FOR YOUR RESEARCH!

EXAMPLES FOR CLINICAL STUDIES WITH T50:

POPULATION INVESTIGATED	RESULT	EVIDENCE	YEAR
Chronic kidney disease ^{3,4,5,6,7,8,9} including dialysis patients and kidney transplantation	T50 associates with: <ul style="list-style-type: none"> • CV complications • CV and all-cause mortality • Progression of calcification • Drug efficacy 	>13,000 patients investigated >30 publications	Continuously since 2014
General population ¹⁰	Independent CV risk factor	Study with 6231 participants	2020
Peripheral arterial disease ¹¹	Independent predictor of CV events and death	Study with 287 participants	2021

T50, CPP AND THE PHYSIOLOGICAL MINERAL BUFFER SYSTEM

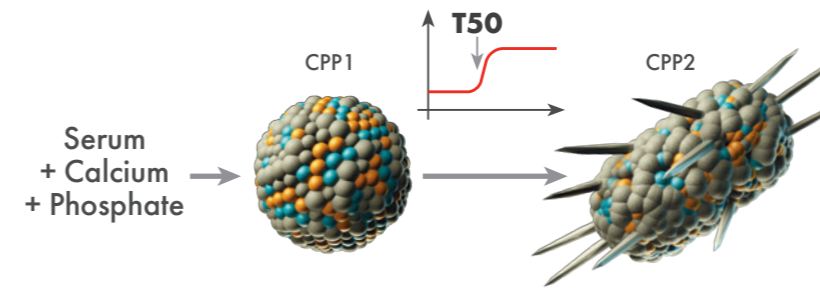
Calciprotein particles (CPP) are circulating, naturally occurring nanoparticles, consisting of calcium, phosphate and specific proteins, mainly fetuin-A^{12, 13}. Functionally, CPP represent the body's *mineral buffer system*², i.e., the physiological system for the precipitation control, transportation and excretion of minerals. The *mineral buffer system* has only recently been recognized and its performance is fundamental for aging processes.

CPP2 induce oxidative stress, inflammation and calcification^{14,15}. In contrast, CPP1 are regarded as rather non-toxic to the body.

This dichotomous system of particles resembles the cholesterol system of LDL ("bad cholesterol") and HDL ("good cholesterol"). Uremic CPP2 are believed to be the most toxic particles. The therapeutic reduction of CPP2 formation is believed to be of benefit².

T50 is a unique in vitro diagnostic test that measures the delay of CPP2 formation in human serum. It thus provides an estimate of the blood's capacity to resist CPP2 formation¹⁶.

A rapid transformation time (low T50) indicates high calcification propensity, which is associated with poor prognosis. The T50 result is given in minutes.



T50 TEST PRINCIPLE¹⁶

The addition of supersaturating amounts of calcium and phosphate to serum induces the formation of CPP1. These globular nanoparticles (diameter < 50 nm) contain amorphous calcium phosphate. Upon incubation at 37°C, CPP1 transform into spindle shaped

CPP2, which contain crystalline calcium phosphate (hydroxyapatite). T50 is the time point when half of the CPP1 have been converted into CPP2. The T50 test is conceptually ingeniously simple, yet technically demanding. T50 is trademark and patent protected.



KEY INFORMATION

Samples: serum (not plasma!), 150 µL

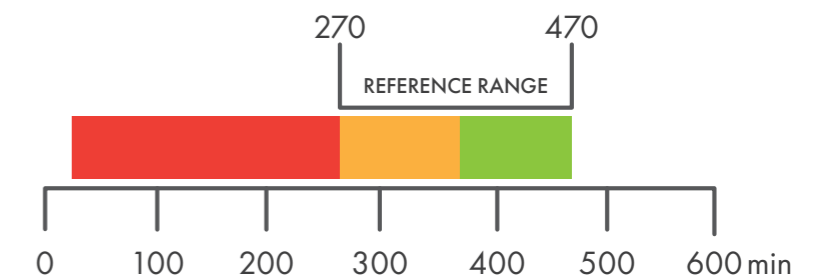
Storage: -80°C throughout

Shipment: on dry ice

PRECISION:

Intra-day variability: CV 2.2 - 3.3%

Inter-day variability: CV 3.4 - 5.4%



ASK FOR YOUR T50 QUOTATION TODAY!

Samples can be sent to Calciscon's lab facilities in Biel/Bienne, Switzerland for the measurements of:

- T50 test
- CPP2 diameter after completion of T50, by 3D-DLS
- New product: Urine T50 Test

1: Ketteler et al., *Kidney Int* 2006; **2:** Pasch, *Int J Nephrol* 2018; **3:** Smith et al., *JASN* 2014; **4:** Keyzer et al., *JASN* 2015; **5:** Pasch et al., *CJASN* 2016; **6:** Dahle et al., *AJT* 2016; **7:** Bostom et al., *AJN* 2018; **8:** Bundy et al., *CJASN* 2019; **9:** Ponte et al., *NDT* 2020; **10:** Eelderink et al., *ATVB* 2020;

11: Bojic et al., *Thromb Haemost* 2021; **12:** Heiss et al., *J Biol Chem* 2003; **13:** Heiss et al., *J Biol Chem* 2008; **14:** Aghagolzadeh et al., *Atherosclerosis* 2016; **15:** Aghagolzadeh et al., *Atherosclerosis* 2017; **16:** Pasch et al., *JASN* 2012.

3D-DLS: three dimensional dynamic light scattering

T50 for your research!

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The T50 Calcification Propensity test is a CE marked IVD product.
It is available through selected accredited medical laboratories.