

Point of care diagnostic kit for cardiac Troponin I [HeartChk♥]

Introduction

Cardiovascular diseases (CVDs), especially coronary heart disease contributes to about 28% of deaths in India, which of course is following an increasing trend due to poor air quality, emotional stress, unbalanced nutrition, and insufficient medical services, especially in rural sector. Some colorimetric kits interfaced with readers are available for quantitative estimation of cardiac troponin I (cTnI) but colorimetric sensors face issue of sensitivity as compared to electrochemical devices. Availability of point of care testing (POCT) device or diagnostic tool can rapidly be used to decide the treatment prognosis and immediately start it. This ability could help hospitals with more rapid triage and management of those diagnosed with a heart attack, as well as being able to safely discharge the patients after their routine treatment.

Unique features of Diagnostic Kit

- Low cost chip and read-out
- Fast and quantitative detection
- Easy to use, Portable
- Fast analysis: 5 mins
- Minimal sample preparation
- Point-of-care
- Sensitivity: 5 pg/mL to 200 ng/mL



Applications

- Quantitative detection of Cardiac Troponin I biomarker
- Can be used by healthcare professional in point-of-care centres, diagnostic centres, etc.
- Fast diagnosis and low cost which could make it ideal for urban as well as rural clinics.
- Open ended platform. By change of bioreceptors, device and chip can be used for many other analytes



Specifications of Diagnostic Kit

PRODUCT NAME:	HeartChk♥	
INTENDED USE:	The quantitative determination of cardiac Troponin-I concentration in human serum	
PRODUCT OVERVIEW:	<p>The cardiac Troponin I (cTnI) is one the recommended biomarkers for acute myocardial infarction (AMI). Even the current medical guidelines recommend troponin testing in the triage of patients with chest pain. The elevated troponin levels reach at their peak in about 12-48 hours but can be detected event after 3-4 hours of chest pain.</p> <p>The product is a portable/handheld electrochemical device and comes with ready to used functionalized immuno-electrodes. Such portable device finds immense importance in case of emergency patients where it is critical to decide treatment prognosis based on the troponin I levels. Troponin I detection can aid doctors to rule out or to find the heart attack.</p>	
TECHNICAL SPECIFICATIONS:		
	Method:	Label free immunosensing
	Principle:	Electrochemical detection of immune-complex formed as a result of antigen-antibody interaction
	Sample type:	Serum
	Sample volume:	10-15 µl
	Measuring range:	5.0 pg/mL – 100 ng/mL
	Total time:	10 minutes, including sample transfer on electrode, incubation period and data collection
	Storage:	2 – 8 °C
	Technology package:	(i) Method for functionalization of electrodes (ii) Method to print the screen electrodes (iii) Ready to use strip (iv) Portable read out
	Estimation Information:	Quantitative
	IPR Status:	Patented
	Level/Scale of development:	Lab scale
	Contact Details:	Director, CSIR-Central Scientific Instruments Organisation, Chandigarh, 160030 Email: director@csio.res.in