



BSI Standards Publication

Molecular in vitro diagnostic examinations — Specifications for pre-examination processes for venous whole blood

Part 1: Isolated cellular RNA

National foreword

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English Version

**Molecular in vitro diagnostic examinations - Specifications for
 pre-examination processes for venous whole blood - Part 1:
 Isolated cellular RNA**

Tests de diagnostic moléculaire in vitro - Spécifications
 relatives aux processus préanalytiques pour le sang
 veineux total - Partie 1 : ARN cellulaire isolé

Molekularanalytische in-vitro-diagnostische Verfahren -
 Spezifikationen für präanalytische Prozesse für venöse
 Vollblutproben - Teil 1: Isolierte zelluläre RNS

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Foreword

This document (CEN/TS 16835-1:2015) has been prepared by Technical Committee CEN/TC 140 "In vitro diagnostic medical devices", the secretariat of which is held by DIN.

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Introduction

Molecular *in vitro* diagnostics has enabled a significant progress in medicine. Further progress is expected by new technologies analyzing signatures of nucleic acids, proteins, and metabolites in human tissues and body fluids. However, the profiles of these molecules can change drastically during primary sample collection, transport, storage, and processing thus making the outcome from diagnostics or research unreliable or even impossible because the subsequent analytical assay will not determine the situation in the patient but an artificial profile generated during the pre-examination process. Therefore, a standardization of the entire process from sample collection to RNA analysis is needed. Studies have been undertaken to determine the important influencing factors. This Technical Specification draws upon such work to codify and standardize the steps for venous whole blood cellular RNA analysis in what is referred to as the preanalytical phase.

1 Scope

This Technical Specification recommends the handling, documentation and processing of venous whole blood specimens intended for cellular RNA analysis during the preanalytical phase before a molecular assay is performed. This Technical Specification covers specimens collected by venous whole blood collection tubes. This Technical Specification is applicable to molecular *in vitro* diagnostic examinations (e.g. *in vitro* diagnostic laboratories, laboratory customers, *in vitro* diagnostics developers and manufacturers, institutions and commercial organizations performing biomedical research, biobanks, and regulatory authorities).

Blood cellular RNA profiles can change significantly after collection. Therefore, special measures need to be taken to secure good quality blood samples for cellular RNA analysis and storage.

Different dedicated measures need to be taken for stabilizing blood cell free circulating RNA and RNA in exosomes circulating in blood, which are not described in this Technical Specification.

Different dedicated measures need to be taken for collecting, stabilizing, transporting and storing capillary blood as well as for collecting and storing blood by paper based technologies. These are not described in this Technical Specification.

RNA in pathogens present in blood is not covered by this Technical Specification.

2 Normative references

The following documents, in whole or in part, are normative referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 15189:2012, *Medical laboratories - Requirements for quality and competence (ISO 15189:2012, Corrected version 2014-08-15)*

ISO 15190, *Medical laboratories — Requirements for safety*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 15189:2012 and the following apply.

3.1

ambient temperature

unregulated temperature of the surrounding air

3.2

analytical phase

processes that start with the isolated analyte and include all kind of parameter testing or chemical manipulation for quantitative or qualitative analysis

3.3

blood cellular RNA

cellular RNA

RNA molecules present in blood cells

3.4

blood cellular RNA profiles

amounts of different RNA molecules, that are present in blood cells and that can be measured in the absence of any losses, inhibition and interference