



Technology Offer

Ref.-No. M1512

Assessment of risk of hypertension using a novel Salt-Blood-Test (SBT)

Introduction

Nearly one billion people worldwide suffer from high blood pressure. Being the major cause of heart attack and stroke, arterial hypertension is a global health problem and its prevalence is predicted to increase even more in the next years.

The main problem is that an early diagnosis, namely BEFORE manifest hypertension, is not possible. Once high blood pressure has manifested, irreversible damages of the cardiovascular system, the kidney and other organs are inevitable.

An emerging concept of "vascular salt sensitivity" has been recently described (Kusche-Vihrog and Oberleithner, F1000 Biol Rep. 2012; 4: 20). This concept is based on a salt-induced change in the function of the vascular endothelium.

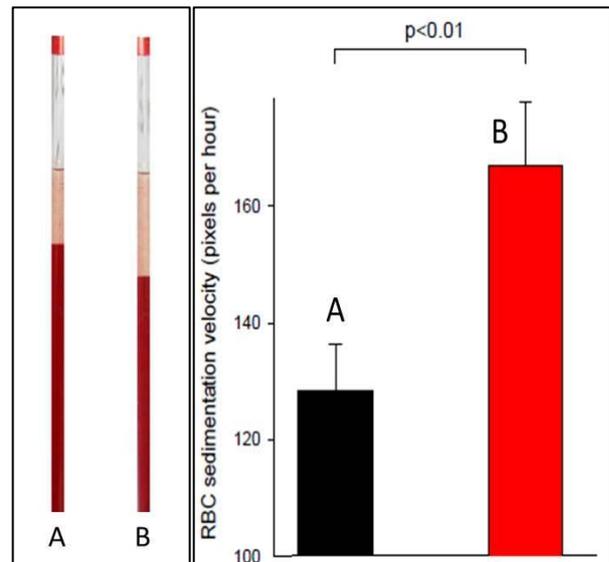
Now it was found that red blood cells (RBC) "report" on this functional change. This observation led to the following invention.

Invention

The present invention published in May 2013 as two original papers (Oberleithner, Pflügers Arch-Eur J Physiol 2013, DOI 10.1007/s00424-013-1288-y; Oberleithner and Wilhelmi, Pflügers Arch-Eur J Physiol 2013, DOI 10.1007/s00424-013-1288-y) provides a method that can be used for a quick and simple test to determine whether an individual is salt sensitive and most likely prone to develop manifest arterial hypertension later in life. The method is based on the finding that the functional state of the RBC glycocalyx reflects the functional state of the endothelial glycocalyx. Therefore, the functional state of the RBC glycocalyx is a prognostic parameter for the onset of hypertension later in life.

A decreased sodium-dependent RBC zeta potential, relative to a threshold value, indicates that the vasculature of an individual is sensitive to salt. In the presence of an aggregation cocktail, composed of a specific sodium concentration plus an aggregation accelerant, RBC sedimentation velocity can

be directly related to salt sensitivity. This parameter can be detected in a small blood sample mixed with an appropriate aggregation cocktail.



RBC sedimentation velocity in aggregation cocktail (60 minute value). **A:** RBC after exposure to intact endothelium. **B:** RBC after exposure to damaged endothelium.

Advantages of the invention

- Vascular sensitivity to salt and the disposition for arterial hypertension can be determined within one hour.
- Virtually stress-free for the test person (puncture of the fingertip to obtain about 200 µl blood)
- Early actions for preventing hypertension can be started if the SBT is positive.
- Irreversible long-term damage of the vascular system can be prevented.

Patent situation

A European patent application has been filed.

For further detailed information please contact:

Clinic Invent

Dr. Marion Willenborg
Albert-Schweitzer-Campus 1, D3
D-48149 Münster, Germany

Tel. +49-(0)251/83 58 904
Fax +49-(0)251/ 83 58 905
marion.willenborg@ukmuenster.de