# Ceramide/Sphingosine-1-phosphate in patients with Hypertension Compared with normotensive controls: a casecontrol Study

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Hypertension is characterized by vascular remodelling and endothelial dysfunction. Sphingolipids such as ceramide and sphingosine-1-phosphate may play an important role in regulation of vascular contractility and tonus. In this study the altered...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Observational non invasive

# Summary

### ID

NL-OMON40437

**Source** ToetsingOnline

#### **Brief title**

Ceramide/Sphingosine-1-phosphate in patients with Hypertension

# Condition

- Other condition
- Lipid metabolism disorders

**Synonym** Hypertension en verhoogde bloeddruk

#### **Health condition**

Bloeddrukregulatie

# **Research involving**

Human

### **Sponsors and support**

**Primary sponsor:** Erasmus MC, Universitair Medisch Centrum Rotterdam **Source(s) of monetary or material Support:** Ministerie van OC&W

### Intervention

Keyword: Ceramide, Hypertension, Sphingolipids, Sphingosine-1-phosphate

### **Outcome measures**

#### **Primary outcome**

The main study parameter is the subfraction of

Ceramide/Sphingolipid-1-phosphate in serum plasma

#### Secondary outcome

Not Applicable

# **Study description**

#### **Background summary**

Hypertension (HT) is a major risk factor for cardiovascular diseases and arises as a consequence of altered activity in signal transduction pathways and interactions of complex intra- and intercellular processes. The exact mechanism and causes of HT are unknown in 95% of cases, also called essential hypertension. HT is associated with increased vasomotor tone and decreased vasodilator potential and continuous remodeling of blood vessels. This impaired vascular tone is based on vascular inflammatory responses mediated greatly by pro-inflammatory cytokines, low-density lipoproteins or other risk factors which is responsible for inducing cardiovascular diseases. The impaired vascular tone is essential in HT and is induced by decreased nitric oxide availability and an increased endothelium-derived contractile factor (EDCF)1-3. Regulation of this vascular tonus contractility balance is partly mediated by an intrinsic network of bioactive lipids also classified as sphingolipids. Recently investigations has shown that these sphingolipids metabolites such as Ceramide and sphingosine-1-phosphate(S1P) are bioactive lipid mediators with a variety of effects in both intracellular and

extracellular signaling pathways that influence the vascular tone.4 Their major and important role is regulation of cell proliferation, survival, inflammation, and cell death which is induced by the activation of G-protein coupled S1P receptors 1, 2 and 3. These receptors are mainly expressed in de cardiovascular system and activation induces proliferation of many cell types including vascular cells and have growth-inhibiting and pro-apotic responses and inducing vasoconstriction in most vessels.5 Animals studies have shown increased levels of ceramide in spontaneously hypertensive rats compared to normotensive rats and these results indicate that sphingolipids mechanism-based effects is associated with vascular dysfunction and may play a important role in the pathogenesis of essential hypertension6-7. .In this study the sphingolipid subfraction will be investigated.

#### Study objective

Hypertension is characterized by vascular remodelling and endothelial dysfunction. Sphingolipids such as ceramide and sphingosine-1-phosphate may play an important role in regulation of vascular contractility and tonus. In this study the altered sphingolipid subfraction level in a homogenous hypertensive population will be investigated .

### Study design

This study is a Case-control study

#### Study burden and risks

The burden and risks associated with participation is that during one visit two blood samples will be performed in combination with a questionnaire. There are no physical discomfort and there are no risks associated during participation. A questionnaire must be filled in and will take no longer than five till ten minutes of time to complete the questionnaire by the participants.

# Contacts

**Public** Erasmus MC, Universitair Medisch Centrum Rotterdam

Gravendijkwal 230 Rotterdam 3015 CE NL **Scientific** Erasmus MC, Universitair Medisch Centrum Rotterdam

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Gravendijkwal 230 Rotterdam 3015 CE NL

# **Trial sites**

### **Listed location countries**

Netherlands

# **Eligibility criteria**

Age Adults (18-64 years) Elderly (65 years and older)

### **Inclusion criteria**

Patients with age between 18 and 55 years with Grade 1 to 3 Hypertension

# **Exclusion criteria**

Pregnancy Use of statin medication Age under 18 years

# Study design

### Design

Study type:Observational non invasiveIntervention model:OtherAllocation:Non-randomized controlled trialMasking:Open (masking not used)Control:Active

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Primary purpose:

**Basic science** 

### Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	10-09-2014
Enrollment:	40
Туре:	Actual

# **Ethics review**

Approved WMO	
Date:	11-06-2014
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

# **Study registrations**

# Followed up by the following (possibly more current) registration

No registrations found.

# Other (possibly less up-to-date) registrations in this register

No registrations found.

### In other registers

Register CCMO **ID** NL47328.078.14