

# Modulators of telomerase activity

<b>Submission date</b> 05/02/2016	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
<b>Registration date</b> 16/02/2016	<b>Overall study status</b> Completed	<input type="checkbox"/> Protocol
<b>Last Edited</b> 18/10/2016	<b>Condition category</b> Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
		<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

The cells in the human body contain DNA, complex chemical that carries genetic information. DNA is made up of small, 'X' shaped structures which are responsible for specific genes (chromosomes). At the ends of the chromosomes are stretches of DNA called telomeres, which protect the genetic material by preventing the DNA from fraying and unravelling, like the plastic tips on the end of shoe laces. As cells reproduce (copy themselves into two identical cells), the telomere caps become shorter, which is linked with the process of aging (at a cellular level). When the telomeres become too short to do their job properly, the cells can no longer divide and so becomes inactive (senescent) or dies. This shortening process is associated with aging, cancer, and a higher risk of death. Recent studies have shown that there is a connection between the processes of telomere shortening and the development of cardiovascular disease (disease of the heart and blood vessels). Telomerase is a protein which can help to prevent telomere shortening by lengthening telomeres in certain types of cells. By increasing the activity of telomerase, it could be possible to help slow down cellular aging, and prevent the development of diseases such as cardiovascular disease. The aim of this study is to find out whether atorvastatin (a cholesterol lowering drug) and perindopril (a blood pressure lowering drug) can help to increase telomerase activity in patients with high cholesterol and high blood pressure with no signs of significant cardiovascular disease.

### Who can participate?

Adults aged between 35 and 75 years with high cholesterol can take part in part one and adults aged between 35 and 75 years with high blood pressure and no known diabetes or heart disease can take part in part two.

### What does the study involve?

In part one of the study, 100 participants with high cholesterol are randomly allocated to one of two groups. Those in the first group are treated with 20mg atorvastatin every day for 12 months. Those in the second group do not receive any medication for the two months of the study. In part two of the study, 52 participants with high blood pressure are randomly allocated to one of two groups. Those in the first group are treated with 5-10mg of perindopril daily for 12 months as well as any diuretics (water tablets) needed to control their blood pressure (if necessary). Those in the second group are treated using standard medications used to treat high

blood pressure for 12 months. At the end of the study, participants in both groups of each part of the study have blood and urine samples taken so that they can be assessed in the lab for signs of telomerase activity.

What are the possible benefits and risks of participating?

There are no direct benefits to participants. There is a small risk that participants may experience pain and bruising following blood tests.

Where is the study run from?

National Research Center for Preventive Medicine, Ministry of Healthcare of Russian Federation (Russia)

When is the study starting and how long is it expected to run for?

February 2013 to March 2015

Who is funding the study?

Ministry of Healthcare of Russian Federation (Russia)

Who is the main contact?

Dr Irina Strazhesko

## Contact information

### Type(s)

Scientific

### Contact name

Dr Irina Strazhesko

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## Additional identifiers

### Protocol serial number

01201251133

## Study information

**Scientific Title**

Effect of atorvastatin therapy and perindopril therapy on telomerase activity in patients free of cardiovascular diseases

**Study objectives**

Twelve months of statin therapy or perindopril therapy increases telomerase activity in peripheral blood mononuclear cells.

**Ethics approval required**

Old ethics approval format

**Ethics approval(s)**

National Research Center for Preventive Medicine, 13/03/2013, ref: 06-03-14

**Study design**

Single-centre randomised controlled trial with two sub-study arms

**Primary study design**

Interventional

**Study type(s)**

Treatment

**Health condition(s) or problem(s) studied**

1. Hypercholesterolemia
2. Hypertension

**Interventions**

Part one - Atorvastatin arm:

Participants are randomized (using of a table of random numbers) to one of two groups in a 1:1 ratio.

Intervention group: Participants receive 20mg atorvastatin daily for 12 months.

Control group: Participants do not receive any additional medication in the 12 month study period.

Part two - Perindopril arm:

Participants are randomised (using of a table of random numbers) to one of two groups in a 1:1 ratio.

Intervention group: For 12 months participants receive 5-10 mg of perindopril once or twice a day as monotherapy or in combination with diuretics to achieve target levels of blood pressure.

Control group: For 12 months participants receive other antihypertensive drugs: beta-blokers, calcium antagonists, diuretics to achieve target levels of blood pressure. In this group inhibitors of renin-angiotensin-aldosterone system are prohibited.

**Intervention Type**

Drug

**Phase**

Not Applicable

**Drug/device/biological/vaccine name(s)**

1. Atorvastatin 2. Perindopril

**Primary outcome(s)**

Telomerase activity, measured by quantitative polymerase chain reaction at 12 months

**Key secondary outcome(s)**

1. Markers of chronic inflammation (C-reactive protein, fibrinogen, interleukin 6), measured using blood analysis at baseline and 12 months
2. Blood urea, measured using uranalysis at baseline and 12 months
3. Carotid-femoral pulse wave velocity, measured using SphygmoCor at baseline and 12 months
4. Intima-media thickness and atherosclerotic plaques number, measured using ultrasonography with PHILIPS iU22 ultrasound system at baseline and 12 months
5. Flow dependent vasodilation, measured by probe with reactive hyperemia at baseline and 12 months

**Completion date**

02/03/2015

**Eligibility****Key inclusion criteria**

All participants:

Aged 35 to 75 years

Atorvastatin arm:

1. Diagnosed with hypercholesterolemia (low-density lipoproteins cholesterol [LDL-C]  $\geq 160$  mg/dL (4.16 mmol/L) in the presence of 0–1 CVD risk factors and LDL-C  $\geq 130$  mg/dL (3.38 mmol/L) in the presence of two or more CVD risk factors
2. Absence of any lipid-lowering therapy at the time of inclusion

Perindopril arm:

1. Hypertension grade 1-2

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Mixed

**Sex**

All

**Key exclusion criteria**

1. Any chronic somatic diseases, including CVD associated with atherosclerosis, grade 3 hypertension, chronic heart failure (NYHA III–IV), chronic kidney disease (glomerular filtration rate  $< 60$  mL/min/1.73m<sup>2</sup>), liver disease, type 2 diabetes mellitus, acute and chronic

inflammatory diseases, cancer, pregnancy, lactation  
2. Refusal to participate in the study

**Date of first enrolment**

05/04/2013

**Date of final enrolment**

16/08/2013

## Locations

**Countries of recruitment**

Russian Federation

**Study participating centre**

**National Research Center for Preventive Medicine**

Ministry of Healthcare of Russian Federation

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Moscow

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## Sponsor information

**Organisation**

Ministry of Healthcare of Russian Federation

**ROR**

<https://ror.org/01p8ehb87>

## Funder(s)

**Funder type**

Government

**Funder Name**

Ministry of Healthcare of Russian Federation

## Results and Publications

## Individual participant data (IPD) sharing plan

### IPD sharing plan summary

Not expected to be made available

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	30/09/2016		Yes	No