TeloPro® 's Effect on Telomere Elongation in Humans

Abstract

TeloPro® Proprietary Blend is a soft-gel dosage form dietary supplement based on an formulation of natural product extracts from traditional Chinese medicines Astragalus Membranaceus and Chinese Ginseng.

This research summarizes the findings on telomere length (TL) changes of TeloPro® over 9 months period.

The research was conducted on 48 relatively healthy subjects aged 31-80 years old. Subjects taking TeloPro® (2 capsules daily) significantly increased TL over the 9 months period, whereas the TL of subjects who didn't take TeloPro® enough time for 9 months was increased slightly or not lengthened.

The findings suggest that TeloPro® can lengthen telomeres in a statistically significant manner.

Keywords: Telomere Length, TeloPro®, Astragalus, Ginseng

Statement

The research was conducted by TeloPro Biosciences GmbH internally. It is not published in any journal, or peer-reviewed.

The right of interpretation belongs to TeloPro Biosciences GmbH and can not be reproduced at will.

This research is still ongoing, it is not a final and "set in stone" result, it may adjust the findings at any time.

Introduction

Astragalus Membranaceus and Chinese Ginseng have been commonly used in traditional Chinese medicines(TCM) for centuries, it's usage in China dates back further than 2000 years.

TeloPro® Proprietary Blend is a soft-gel dosage form dietary supplement based on an formulation of natural product extracts from Astragalus Membranaceus and Chinese Ginseng.

The formulation (TeloPro® Proprietary Blend) is manufactured under the regulations of current good manufacturing practice (cGMP) in Germany. It is sold as a dietary supplement by the company TeloPro Biosciences GmbH.

The research provides the evidence that dietary supplementation with TeloPro® has the ability to lengthen telomeres, with no observed safety concerns.

Materials and Methods

Research design

Due to the reasons for limitation of funding and number of subjects, and the basic situation that we have known of telomere shortening with age according to a large number of articles and reports[1-4], we did not set up placebo group in this research.

When we design this research, we didn't find definite positive product for telomere lengthening on the market, we did not set up positive control group in this research.

We only designed to observe TL changes "before" and "after" taking TeloPro® (2 capsules daily) for 9 months.

However, considering the objectivity of this research, we set up a blind design for the testing personnel, avoiding them from knowing the "before" and "after" samples belongs to the same subjects from the birthday information. The testing was conducted in Madrid, Spain.

The testing organization were blinded until the completion of the research.

After initial screening, a total of 48 subjects were recruited and 45 subjects completed the research, 3 subjects didn't take TeloPro® enough time for 9 months.

The research involved 270 days of taking 2 capsules of TeloPro® every day. The research was run for a period of 9 months, but it actually took 1 year and 9 months to complete due to various reasons, such as waiting all samples to be collected to send to testing organization.

The subjects had 5 visits during the research: preselection, day 0 (baseline), at 3, 6, and 9 months (final visit).

The 2 capsules were taken once daily after a meal. After baseline testing, subjects were given 3 months' supply of TeloPro®, which they took home for consumption. After baseline, additional visits were scheduled each 3 months until the end of the research. It is checked to see that all the TeloPro® given at the prior visit had been consumed to confirm compliance.

The male to female ratio was 0.85.

Blood collection

Blood was collected 2 times during the study: at day 0 and 9 months.

Blood was tested for biomarkers, and an aliquot was used to isolate peripheral blood mononuclear cells (PBMCs) for the high-throughput measurement of TL by fluorescent in situ hybridization (FISH).

PBL isolation and frezing procedure click here.

Body check up

Body check up was performed 2 times during the study: at day 0 and 9 months. Body were checked and blood was drawn from each subject.

Assays for a comprehensive metabolic panel(glucose, blood urea nitrogen, creatinine, bilirubin etc.), hematology panel (RBC, hemoglobin, white blood cells count, platelets etc.), inflammatory markers (C reactive protein), lipid panel (total cholesterol, triglycerides etc.), Tumor markers (AFP qualitative) alpha-fetoprotein (qualitative) and tumor markers (CEA qualitative) carcinoembryonic antigen (qualitative) were carried out at Medical center.

Measurement of TL

20% Short Telomeres/Median Length of Telomeres/Average Length of Telomeres/ Biological Age in PBMCs was measured by Life Length (Spain).

Life Length measure telomere length by quantitative FISH (Q-FISH or Quantitative Fluorescence In Situ Hybridization) on interphase nuclei both on tissue sections (Telomapping) and on blood cells or any other cell type that can be attached to a plate (High Throughput Q-FISH) where telomeres are hybridized with an anti-telomeric probe labeled with a fluorophore[5]. Each anti-telomeric probe recognizes a fixed number of telomeric repeats (base pairs). For this reason, the intensity of the fluorescent signal from telomeric probes that hybridize to a given telomere is directly proportional to the telomere length. Fluorescence intensity signals are transformed into telomere length values for each individual telomere spot within a cell, allowing for the measurement of the whole telomere length distribution in a cell population.

The 20th percentile indicates the telomere length below which 20% of the observed telomeres fall. The median telomere length represents the 50th percentile in the distribution of cell telomere lengths. Average telomere length is the mean length of all telomeres considered together, usually within a population of cells (not even per individual cell). Biological age is not chronological age. Life Length calculates biological age using a mathematical formula that takes into chronological age group which is then weighted by their telomere length results.

Results

Analyze the telomere length data before and after taking TeloPro® 9 months period.

1. 20% Short Telomeres

Analyze 20% Short Telomere Length data before and after taking TeloPro®, in 45 subjects, 38 subjects showed different degrees of growth (the data of the remaining 7 subjects are marked in yellow). The increase in the number of people accounted for 84.44%; an average increase of 0.73Kb, a growth rate of 15.61%;

2. Median Length of Telomeres

Analyze Median Length of Telomere data before and after taking TeloPro®, in 45 subjects, 42 subjects showed different degrees of growth (the data of the remaining 3 subjects are marked in green). The increase in the number of people accounted for 93.33%; an average increase of 0.86Kb, a growth rate of 8.95%;

3. Average Length of Telomeres

Analyze Average Length of Telomeres data before and after taking TeloPro®, in 45 subjects, 43 subjects showed different degrees of growth (the data of the remaining 2 subjects are marked in dark yellow). The increase in the number of people accounted for 95.56%; an average increase of 0.63Kb, a growth rate of 4.51%;

4. Biological Age

Analyze Biological Age data before and after taking TeloPro®, in 45 subjects, 41 subjects showed a corresponding decrease in biological age (the data of the remaining 4 subjects are marked in red). The decrease in the number of people accounted for 91.11%; an average decrease of 4.34 years; the remaining 4 subjects, 2 subjects biological age increase was also lower than their actual age increase.

Note:

1. Samples were delivered to testing organization in Spain 4 times.

2 . 1st and 2nd samples are the "before" sample, it is the real date of birth for male and female.

3. 3rd and 4th samples are the "after" sample.

3.1 For 3rd, it is the real date and month minus 1 for male, and the real date and month plus 1 for female. In this case, there does not show obvious effect on the physical age for "after" telomere length test report (+/- 1 month and 1 day).

3 .2 For 4th, it is the real date, month and year plus 1 for male, and the real date, month and year minus 1 for female.

In this case, there show obvious effect on the physical age for "after" telomere length test report (+/- 1 year, 1 month and 1 day).

Additionally, due to the recruiting time of each subject is different, and this is the last time to deliver samples, so wait until all samples have been collected, there is additional around 6 months difference on the "after" report.

So there is 2.5/2.6 years effect on the "after" telomere length test report for female and 0.3/0.4 years effect on the "after" telomere length test report for male(for the data we adjusted on the physical age, we mark for female in red and male in blue).

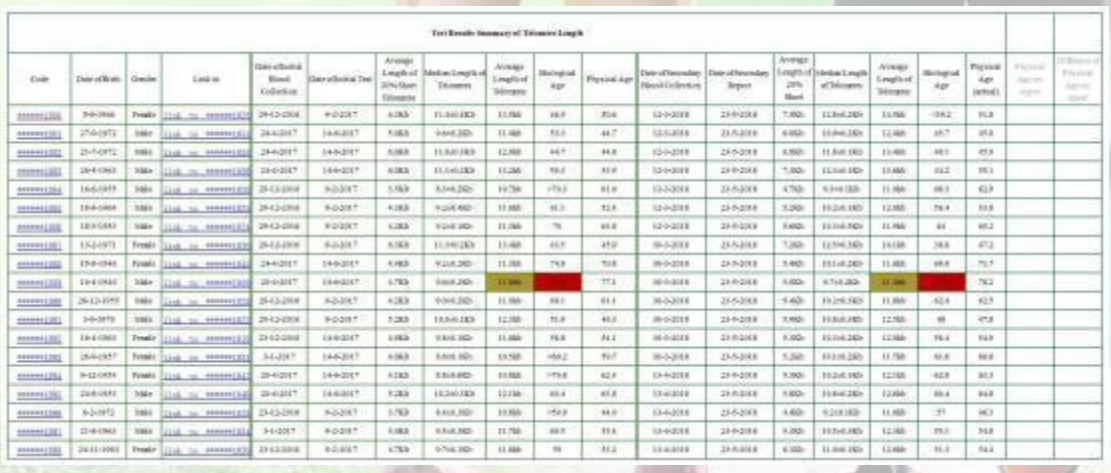
4. Due to personal reasons, 3 female subjects didn't take TeloPro® enough time for 9 months(only taking 1-2 months) after completing the body check up and blood drawn. But they were very interested in their telomere length. Therefore, when sent the sample at the4th time, their "before" and "after" samples were also included in the sample list and we also adjusted their birthday information and blood draw time.

For "before", it is the real date, month and year minus 1 for female. Due to their sample were collected in fact in 16th/23rd December, we adjust to 30th May 2018. So there is 1 year and 6 months effect on the physical age for "before" telomere length test report(for the data we adjusted on the physical age, we mark for female in purple).

For "after", it is the real date of birth.

Test Results Summary of Telomere Length is below:

You can click the underlined link code and code to check the "before" and "after" telomere length testing report of each subject.



see more>>

Discussion

In this study, the subjects who didn't take TeloPro® enough time for 9 months had not

lengthen telomeres or had slightly increase whereas the TeloPro® group had net increase. **The findings suggest that TeloPro® can lengthen telomeres in a statistically significant manner.**

This research is still ongoing, it is not a final and "set in stone" result, it may adjust the findings at any time.

References

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