

# Tissue Engineering, Stem Cells and Regenerative Medicine

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### Senolytic effect of dasatinib and quercetin on human beings

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Senescent cells are the last generation of cell differentiation. If programmed cell death (apoptosis) is not activated, then it becomes the main source of intoxication for organism. After 36 years their amount is so great, that signs of aging start strongly manifesting. For many years, scientists try to find combination of substances that could kill part of senescent cells. In our experiment we examine the senolytic effect of dasatinib and quercetin on people. Dasatinib is a treatment for oncology diseases, especially widely used when other treatments are no longer working. Quercetin is the vitamin from bioflavonoid group. So as to assess the anti-aging effect of dasatinib and quercetin, we went through clinical trial. For this trial we picked up certain volunteers. Our volunteers were only men participants in spectrum of middle and old ages (36-40 y.o.). We eliminated all female participants, because mutagenous impact of dasatinib on oocytes is not examined properly. As for the male-participants they were recommended to avoid fertilization for the first 3 months after the clinical trial.

Generally, 64 men took part in our clinical trial. We classified all these participants into 4 groups, by 16 people for each group. First group of participants had to orally administer 50mg of dasatinib along with 500 mg of quercetin; second group of participants orally administered 50mg of dasatinib and 500 mg of placebo; while third group also took quercetin and placebo, but with different oral dose namely 500mg of quercetin along with 50mg of placebo. The participants of fourth group orally administered two compounds, and both were placebo with a dosage of 500mg and 50mg. These participants of 4 groups must orally administer these compounds once a day after meal for 5 days overall.

For the accurate assessment of anti-aging effect of all compounds stair ascending test was done by participants a day prior to the start of trial and 21 days after the end of trial along with medical screening each time. Complete blood count was performed on participants all this time, and also since the start of the test participants' blood pressure was measured each 10 minutes with 3 overall estimates.

By the end of the trial with the help of all the gathered data it was possible to make a solid conclusion, namely among all four group the first group of participants who orally administered 50mg of dasatinib and 500mg of quercetin demonstrated remarkably outstanding improvement of physical endurance as compared to the rest of the groups. The simultaneous oral administration of dasatinib (50mg) and quercetin (500mg) showcased obvious senolytic (anti-aging) effect.

#### Speaker Biography

Jaba Tkemaladze was previously working as a research scientist at State Institute of Morphology, TV Anchor at Georgian Public Broadcasting, adviser at The Ministry of Defense of Georgia, and research scientist at Georgian Mental Health Coalition. His papers include programming and implementation of age-related changes, gerontology research in Georgia, potential role of centrioles in determining the morphogenetic status of animal somatic cells, centriolar mechanisms of differentiation and replicative aging of higher animal cell, centrosomal hypothesis of cellular aging and differentiation, discovery of centrosomal RNA and centrosomal hypothesis of cellular aging and differentiation and centriole, differentiation, and senescence. Jaba was graduate of medicine at State Medical Institute in 1995 with the dissertation "Centriolar theory at age related changes". His researches include embryogenesis and radical rejuvenation. He got PhD in Psychology at the Scientific Research Institute of Psychiatry in 1995 with the dissertation "Senescence, psychosis, cancer". Currently, he is CEO of Longevity Alliance of Georgia.

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