



THE
TUESDAY
MINUTE

IT'S TIME TO FEEL GOOD AGAIN

THIS WEEK'S TOPIC

Telomeres

“The loss of telomeres leads to “chromosomal instability” which means cells age faster and are more likely to mutate into cancer cells.”

For our patients, telomeres will only become popular when a drug becomes available to support them. But for those of us in the wellness field telomeres are another indicator of health or “disease” and more research is showing ways to support them. As a refresher, telomeres are like the protective caps on shoelaces that protect the laces from unraveling. However, these caps are at the end of chromosomes and protect DNA from unraveling during cell division.

Due to the stress involved, telomeres shorten with each cell division and when the telomere is eroded all the way the cell dies. Cell division is not the only thing that shortens telomeres, lipid peroxidation, infection and free radicals can also shorten them. Inflammation and low-grade infection cause massive amounts of free radicals and lipid peroxidation by-products which in turn shorten telomeres, making these cells more prone to damage and premature cell death.

The loss of telomeres leads to



“chromosomal instability” which means cells age faster and are more likely to mutate into cancer cells. On the other hand, telomeres are lengthened by enzymes called telomerase. As we age, telomerase become depleted.

You can see a link to the right to an earlier Tuesday Minute where we discussed the role of lipoic acid and its ability to increase telomeres by increasing telomerase. It's a pretty good one if I do say so myself. In this Tuesday Minute, I want to share 2 insights that center around excess cortisol and telomere shortening. First, the role of high dose fish oil to

reduce inflammation and protect telomeres.

Let's look at this study from Ohio State, a randomized, controlled trial examined the impact of omega-3 supplementation on cellular aging-related biomarkers following a laboratory speech stressor. In total, 138 sedentary, overweight, middle-aged participants, 93 women and 45 men received either 2.5g or 1.25g of omega-3, or a placebo for 4 months. Before and after the trial, participants were stressed with a laboratory speech stressor. Saliva and blood samples were collected once before and repeatedly after

the stressor to measure salivary cortisol, telomerase in peripheral blood lymphocytes, the serum anti-inflammatory cytokine Interleukin-10, the pro-inflammatory cytokines Interleukins-6 and 12 as well as tumor necrosis factor-alpha.

Adjusting for pre-supplementation reactivity, age, sagittal abdominal diameter, and sex, omega-3 supplementation positively altered telomerase significantly at the $p = 0.05$ level and IL-10 $p = 0.05$ level. The control group experienced post-stress declines as evidenced by a decrease in both telomerase by 24% and IL-10 by 26%. Remember, telomerase is the enzyme that lengthens telomeres. Omega-3 also reduced overall cortisol ($p=0.03$) and IL-6 ($p=0.03$) throughout the stressor; the 2.5 g/d group had 19% reduction in cortisol and a 33% reduction in the pro-inflammatory IL-6 compared to the placebo group.

Author, Annelise Madison who worked in the psychiatry division for Institute for Behavioral Medicine stated, "By lowering overall inflammation and cortisol levels during stress and boosting repair mechanisms during recovery, omega-3 may slow accelerated aging and reduce depression risk."

One quick comment about this article that we should remember relating to clinical nutrition. The authors point out that the greatest benefits were seen by patients with the highest omega 6:3 ratio. Most viewers realize the higher the omega 6:3 ratio the more inflammation present. In other words, they had the most to gain, as Omega 3 levels became increased so too, the telomere length.

If a person is sufficient in fish oil, they will not experience the same increases as someone who is deficient. Nutrients are not drugs, they don't force changes even if they are good changes like increased telomeres. Having said that, one of the easiest ways to get the amount of fish oil in the study is with a tsp of Biomega-3 Liquid. Each tsp. supplies 2.5 g of EPA / DHA. It

also has an impressive 1050 mg of DHA. It is the cleanest fish oil available.

This leads me to my second insight. The role of sleep and the relationship to telomere shortening. Harvard researchers measured telomere length in 4,117 people. Compared with those participants who got the most sleep, the people who slept 6 hours or less per night had a 12% decrease in their telomere length.

That might not seem like a significant number, but researchers say a 12% reduction in telomeres is equivalent to 9 years of biological aging! Sleep protects your telomeres. Authors point out that one of the ways sleep protects telomeres is by reducing cortisol. Other authors have shown that elevated cortisol is associated with a significant reduction in telomerase activity.

So, cortisol also sabotages telomerase, the enzyme that rebuilds your telomeres. We've done multiple programs on sleep, two of my favorites are to the right. I would remind you that sleep is where true repair and rebuilding takes place. Biotics Research's Full Spectrum Hemp Extract (Liquid) contains not only the CBD fraction but over 200 other cannabinoids that have anxiolytic activity. I personally use a dropperful of the FS 20 Hemp Extract before bedtime.

Research is showing many compounds will increase telomerase activity; Lipoic acid, curcumin, vitamin D, gota kola, polyphenols, b vitamins, ashwagandha and astragalus as far as I could find. But keeping optimal cortisol levels, supplementing with omega 3 oils and maintaining good sleep are 2 constants we don't want to forget. Thanks for watching and I look forward to being with you again next Tuesday.