

## Telomerase Activator found in CTM for Longevity



Telomere is a region at the end of every cell chromosome that contains repeated DNA sequences but no genes; telomeres act to protect the ends of the chromosomes and prevent them from fusing together. Each time a cell divides, the telomeres get shorter until it can no longer divide. At this stage, the ability of cells to dividing would virtually stop. The telomeres can be elongated by telomerase. Telomerase is a reverse transcriptase that carries its own RNA molecule used as a template when it elongates telomeres by adding repeats (TTAGGG) to the 3' ends. In human, cells that need to divide regularly such as stem cells express telomerase, which allows them to divide. On the contrast, most somatic cells express it only at very low levels in a cell-cycle dependent manner.

Like other kinds of cells, immune cells lose the ability to divide as they age because their telomere becomes progressively shorter with cell division. As a result, the cell changes in many ways, and its disease fighting ability is compromised. But a new study by Geron and UCLA scientists has found that a chemical from the Astragalus root, frequently used in Chinese herbal therapy, can prevent or slow this progressive telomere shortening, which could make it a key weapon in the fight against HIV.

TAT2, which was originally identified from plants used in traditional Chinese therapy and which enhances telomerase activity in other cell types, was tested in several ways. First, they exposed the CD8 T-cells from HIV-infected persons to TAT2 and found it not only slowed the shortening of the telomeres but improved the cells production of chemokines. They then took blood samples from HIV-infected individuals and separated out the CD8 T-cells and the CD4 T-cells from those infected with HIV. They treated the CD8 T-cells with TAT2 and combined them with the CD4 T-cells and found that the treated CD8 cells inhibited production of HIV by the CD4 cells.

Astragalus (Chinese name: Huang-Chi) has been considered as one of the most precious medicinal herb that helps to supplement Qi. Qi is the term in traditional Chinese medicine that mainly indicates the functioning of the system. If the person is in short of Qi, he or she will show many syndrome of organ malfunction and failure that are often seen in aged individuals. Different from Ginsen, which is also an important medicine to improve body function and can be used in an emergent situation such as shock, astragalus is more used in chonical situation to gradually improve the body function.

Now the new study and other studies on TAT2, the active ingredient of astragalus, it becomes clear that the herb improves function of an aged or ailing organ by extending the cycles of cells. The impact of this result is not just limited to the AIDS treatment but would be more broadly used in research for anti-aging agent.

