HERBAL EXTRACT COMPANY

A HERBAL MEDICINE APPROACH TO LONGEVITY

"Herbs are not just remedies for illness, but sources of vitality and longevity."

CHINESE PROVERB

Aging

Aging involves complex physiological changes that reduce cellular functionality. There are two main types:

Chronological Aging: Irreversible, based on time.
Biological Aging: Influenced by cellular and molecular factors and potentially manageable through various interventions.[1]

Mechanism of Aging:[1]	Mechanisms of Phytotherapies:
Oxidative Damage: Free radicals (ROS/RNS) cause cell damage and diseases.	Antioxidants in phytotherapies neutralise reactive oxygen species (ROS), slowing aging.
Inflammation: Chronic inflammation leads to diseases.	Phytotherapies reduce inflammation by regulating immune responses.
Telomere Shortening: Telomeres shorten with age, leading to cellular aging.	Phytotherapies support telomerase activity, maintaining telomere length.
DNA Damage: DNA repair mechanisms degrade over time.	Phytotherapies enhance DNA repair and protect against mutations.
Protein Damage: Proteostasis (protein homeostasis) declines with age.	Phytotherapies aid in maintaining protein stability and functionality.
Cell Death: Apoptosis (programmed cell death) removes damaged cells.	Phytotherapies balance apoptosis, prevent excessive cell loss and encourage healthy cell regeneration.
Gene Longevity: Specific genes influence lifespan.	Phytotherapies activate longevity gene expression and downregulate aging-related gene expression.

Longevity-Promoting Phytotherapies

Reishi *(Ganoderma lucidum)* is valued in Traditional Chinese Medicine (TCM) for promoting health and longevity. **Human clinical trials** show that reishi promotes healthy aging by mitigating age-related physiological changes, restoring normal immunity, and reducing chronic low-level inflammation (inflammaging) associated with age-related diseases. Specifically, reishi has been found to:

- Reduce oxidative stress markers and increase antioxidant status (TEAC)[5]
- Improve plasma total thiols and glutathione content[5]
- Increase the ratio of anti-inflammatory IL-10 to pro-inflammatory TNF-α[6]
- Increase the percentage of Th2 cells[6]
- Decrease the percentage of pro-inflammatory Th17 cells[6]
- Upregulate genes associated with regulatory T cells (FOXP3, TGF-β, IL-10)[6]

Glossy Privet *(Ligustrum lucidum)* is used in TCM to alleviate age-related symptoms. Glossy privet exhibits high antioxidant properties, particularly in phenolic content (94mg/g) and endopolysaccharides (77mg/g), suggesting strong free radical scavenging and oxidant-reducing abilities.[7]

Bacopa *(Bacopa monnieri)* is a very important plant in Ayurvedic medicine where it has been used for its memory enhancing properties. Indications of bacopa include enhancing cognitive function, preventing age-related decline, and addressing neurodegenerative disorders. **Human clinical trials** have shown that bacopa may help to:

- Support the neuronal networks and synaptic plasticity of the brain in older adults.[16]
- Enhance cognitive performance and memory recall in the elderly.[17]

Astragalus *(Astragalus membranaceus)* is a key qi-tonifying herb in TCM, used to treat general weakness, chronic illness, and to boost vitality and stamina. **Human clinical trials** suggest it may support longevity by activating telomerase, an enzyme that renews telomeres.[4]

Cordyceps *(Cordyceps militaris)* tonifies both yin and yang in TCM, making it safe for long-term use as a tonic herb. It is used to combat fatigue, support energy levels, aid recovery after illness, relieve stress, and promote healthy aging. **Human clinical trials** indicate that cordyceps may help to:

- Increase the expression of sirtuins (SirT1, SirT3, SirT6), which are key proteins involved in regulating cellular processes and extending lifespan[8]
- Enhance NAD+ synthesis, crucial for sirtuin activation and cellular energy metabolism[8]
- Stimulate ATP production, improving cellular energy dynamics essential for longevity[8]
- Activate AMPK, a cellular energy sensor[8]
- Stimulate collagen production, improving skin structure and reducing wrinkles[8]
- Reduce oxidative stress[8]

Ginkgo *(Ginkgo biloba)* is used to treat cognitive, mood, and physical function issues related to aging, such as memory impairments and fatigue.[18] **Human clinical trials** suggest that ginkgo may help to:

- Improve stress adaptation (prevent stress-induced increases in salivary cortisol, systolic, and diastolic blood pressure[19])
- Reduce blood viscosity and increase cerebral perfusion in specific brain areas.[20]
- Enhance various cognitive functions, including general intelligence, visuospatial abilities, attentional processes, and information processing speed.[20]
- Improve cognitive performance, neuropsychiatric symptoms, and daily living activities in patients with Alzheimer's disease or vascular dementia.[21]
- Improve memory recall in healthy individuals.[22]

Siberian Ginseng *(Eleutherococcus senticosus)* is historically used in Russia's Siberian taiga region to enhance performance and quality of life. Siberian ginseng has been found in **human clinical trials** to improve cardiac autonomic function and regulate blood pressure in the elderly, potentially aiding in healthy aging and reducing fall risk.[23]

Withania *(Withania somnifera)* is a widely used herb in Ayurveda, valued for its ability to enhance vitality, energy, endurance, and stamina. Withania is also known for promoting longevity and strengthening the immune system without depleting the body's reserves. As an adaptogen, it increases resistance to physical, chemical, and biological stressors.[12] **Human clinical trials** have shown that withania may help to:

- Increase VO2 max, a measure of cardiorespiratory endurance.[12]
- Enhance cognitive function and memory in people with mild cognitive impairment.[13]
- Maintain healthy levels of testosterone and DHEA-S in aging men.[14]
- Improve quality of life, sleep quality, and mental alertness in the elderly.[15]

Korean Ginseng *(Panax ginseng)* has been traditionally used in China, Korea, and Japan to promote vitality, enhance cognitive function, alleviate general weakness, and improve longevity.[9] Shown in **human clinical trials** to improve skin aging by reducing collagen degradation, enhancing skin elasticity, and maintaining moisture.[10] Animal and *in vitro* studies indicate that different ginsenosides can activate the SIRT1 signalling pathway, potentially preventing and treating various diseases. This includes:

- Increasing NAD+ and FOXO1 expression or reducing PARP action to improve antioxidant capacity.[11]
- Blocking NF-κB and HMGB1 to reduce inflammation.[11]
- Regulating AMPK and FOXO3 or inhibiting Beclin-1 for anti-aging effects.[11]
- Down-regulating NF-κB, Akt, and mTOR to combat depression.[11]
- Up-regulating AMPK and PGC1α to improve liver health.[11]

Maritime Pine *(Pinus pinaster)* has antioxidant and anti-inflammatory properties that support healthy aging by reducing oxidative stress. **Human clinical trials** indicate that it may:

- Decrease reactive oxygen species (ROS).[2]
- Reduce spontaneous apoptosis and p56lck activity in peripheral blood lymphocytes.[2]
- Improve skin health in those exposed to environmental stress in urban areas.[3]

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