LIONHEART
LONGEVITY & WELLNESS

Klotho and Whole Body Health

Potential benefits • Evidence table • Primary-study references

Most entries concern α-Klotho. β-Klotho is a distinct protein and is explicitly labeled where relevant. Low-Klotho associations and deficiency models do not prove that increasing Klotho benefits people. This guide summarizes research rather than demonstrated benefits of a Lionheart treatment.

Brain, hair and behavior

Health area	Potential role and supporting evidence	Refs.
Hair loss	**Human tissue / deficiency** May help maintain hair-follicle growth. Silencing Klotho in cultured human follicles inhibited growth and promoted premature regression. Clinical prevention of hair loss has not been established.	1
Dementia risk	**Human genetic association** May be associated with lower Alzheimer-related cognitive decline in certain genetic groups. KL-VS heterozygosity was linked to reduced progression to mild cognitive impairment or Alzheimer disease in APOE4 carriers; this does not establish prevention of all dementias.	2
Alzheimer's disease	**Human association / low Klotho** May support resilience against Alzheimer pathology. Lower cerebrospinal-fluid Klotho was observed in Alzheimer disease; a protective genetic association was found in selected APOE4 carriers. Raising Klotho has not been shown here to prevent or treat human Alzheimer disease.	2, 3
Parkinson's disease	**Animal intervention** May protect dopamine-producing neurons. Klotho reduced nigrostriatal injury in a toxin-induced rat model. Reduced Parkinson disease incidence or progression in people remains unproven.	4
Cognition and memory	**Nonhuman-primate intervention** May improve memory performance. A low-dose peripheral Klotho injection improved cognition in aged rhesus macaques. This supports therapeutic investigation, rather than established human memory enhancement.	5
Addiction tendencies	**β-Klotho • genetics / animals** β-Klotho participates in the FGF21 pathway regulating alcohol preference. Human KLB genetics and mouse experiments support an alcohol-specific role; broad reductions in addiction tendencies or clinical addiction recovery are not established.	6

Numbers refer to the primary-study reference list at the end.

Strength, senses, skin and lungs

Health area	Potential role and supporting evidence	Refs.
Muscle strength	**Human association / low Klotho** May support preservation of strength. Lower plasma Klotho was associated with poorer grip strength and greater decline in knee strength in older adults. These observational findings do not prove supplementation increases strength.	7, 8
Vision loss	**Animals / cells / deficiency** May help preserve retinal function and protect retinal pigment epithelium from oxidative stress. Klotho-deficient mice had impaired retinal function; cell experiments support protective mechanisms. Prevention of human vision loss is unproven.	9, 10
Hearing loss	**Animals / human association** May support auditory function. Deficient mice developed hearing abnormalities, and human observational work links serum Klotho with hearing outcomes. Human treatment or prevention of hearing loss has not been demonstrated by these studies.	11, 12
Skin wrinkles	**Preliminary human topical study** A topical Klotho-containing serum showed improvement in visible photoaging in a pilot study. This preliminary product study does not establish that Klotho alone reduces wrinkles or that systemic Klotho has the same effect.	13
Lung deterioration	**Animals / cells / deficiency** May help maintain lung integrity and resistance to smoke-related cellular injury. Gene disruption caused emphysema in mice; extracellular Klotho reduced smoke-induced cell death in cultured human lung cells. Human lung protection remains investigational.	14, 15
Cancer risk	**Tumor tissue / laboratory** May have tumor-suppressive activity in some cancer contexts. Human breast-cancer tissue and laboratory models showed reduced Klotho expression and growth-inhibiting effects. Lower cancer incidence or effective cancer treatment from raising Klotho is not established.	16

Numbers refer to the primary-study reference list at the end.

Cancer and organ health

Health area	Potential role and supporting evidence	Refs.
Heart and cardiovascular health	**Human association** May be associated with better cardiovascular health. Higher circulating Klotho was associated with lower prevalence of cardiovascular disease in adults. Observational evidence does not establish prevention of heart attacks, stroke or heart failure.	17
Kidney health	**CKD / animal intervention** May protect kidney function and reduce consequences of chronic kidney disease. Low Klotho accompanies CKD, and experimental deficiency worsened injury and calcification; overexpression was protective in mice. Human therapeutic benefit remains investigational.	18
Bladder health	**Animals / human association** May support bladder function. Klotho-mutant mice had altered voiding and bladder contractility; lower serum Klotho was associated with urinary incontinence severity in women. Clinical improvement from raising Klotho remains unproven.	19, 20
Pancreas health / diabetes	**Animal intervention / islet evidence** May help preserve insulin-producing pancreatic β-cells. Pancreatic α-Klotho expression improved β-cell preservation and glucose regulation in a type 2 diabetes mouse model. “β-cell” refers to the cell type, not β-Klotho.	21
Liver health	**Animal / peptide intervention** May reduce liver fibrosis through α-Klotho-related signaling. Deficiency and liver-injury models support a protective role; a Klotho-derived peptide reduced experimental fibrosis. A peptide result is not proof of whole-protein treatment efficacy in people.	22

Numbers refer to the primary-study reference list at the end.

Endocrine function, joints and repair

Health area	Potential role and supporting evidence	Refs.
Pineal gland health	**Indirect evidence only** A direct pineal-health benefit is not established in the sources reviewed. Melatonin improved memory-related outcomes in Klotho-deficient mice, but this does not show that Klotho improves pineal function, melatonin production or pineal calcification.	23
Thymus health	**Mixed / mechanistic evidence** Systemic Klotho deficiency can coincide with thymic abnormalities, but a targeted study found thymic epithelial support of T-cell development did not require Klotho. Improved thymus function or rejuvenation should remain an unconfirmed hypothesis.	24
Sexual health	**Human hormone association** May be related to hormone balance in men. Serum Klotho was positively associated with testosterone in a cross-sectional study. This does not establish improved libido, erections, fertility or sexual performance from increasing Klotho.	25
Joint health	**Human tissue / animals** May help preserve cartilage integrity. Age-related stiffness reduced α-Klotho expression, and experimental loss compromised chondrocyte function and cartilage in osteoarthritis models. Human pain relief or disease modification remains unproven.	26
Accelerated wound healing	**Animal deficiency** May support normal repair. α-Klotho-deficient mice had delayed wound healing and aged-skin-like features. Deficiency evidence does not establish accelerated healing beyond normal rates or clinical efficacy of Klotho treatment.	27

Numbers refer to the primary-study reference list at the end.

Circulation, bone, immunity and aging

Health area	Potential role and supporting evidence	Refs.
High blood pressure	**Animal gene delivery** May modulate blood pressure and protect the kidney. Klotho gene delivery prevented progression of hypertension in spontaneously hypertensive rats. A blood-pressure-lowering effect from Klotho treatment in people is not established by this study.	28
Calcification	**CKD / animal intervention** May reduce abnormal vascular calcification in CKD. Experimental Klotho deficiency promoted calcification, while overexpression was protective. This does not establish reversal of existing human calcification or benefit for every calcified tissue.	18
Bone health	**Animal gene therapy** May help preserve bone architecture in some aging contexts. Secreted-Klotho gene therapy improved bone measures in mice. Effects depend on phosphate–FGF23 physiology; more Klotho cannot be assumed universally beneficial for bone.	29
Immunity health	**Human cells** May protect immune-cell function under inflammatory stress. Klotho reduced oxidative stress and immunosenescent-like changes in cultured human monocytes. Stronger immunity or fewer infections in treated people remains unproven.	30
Gut health	**β-Klotho animals / α deficiency** β-Klotho protected intestinal barrier function in alcohol-exposed mice. Separately, experimental colitis reduced α-Klotho expression. These support pathway research, rather than demonstrated broad gut-health benefits from α-Klotho supplementation.	31, 32
Slowing aging	**Animal intervention / human association** May influence longevity and age-related resilience. Klotho overexpression extended mouse lifespan; lower circulating Klotho was associated with higher mortality in older adults. Human lifespan extension or comprehensive slowing of aging has not been established.	33, 34

Numbers refer to the primary-study reference list at the end.

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Numbered sources correspond to the table rows. Includes observational, experimental and deficiency studies. Reviewed 11 October 2026.

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