



Protecting Cells Through Antioxidant Activity
The Power of Wasabi

Hexaraphane (6-MSITC)

NOMON & Co.

LIFE IS LONG.

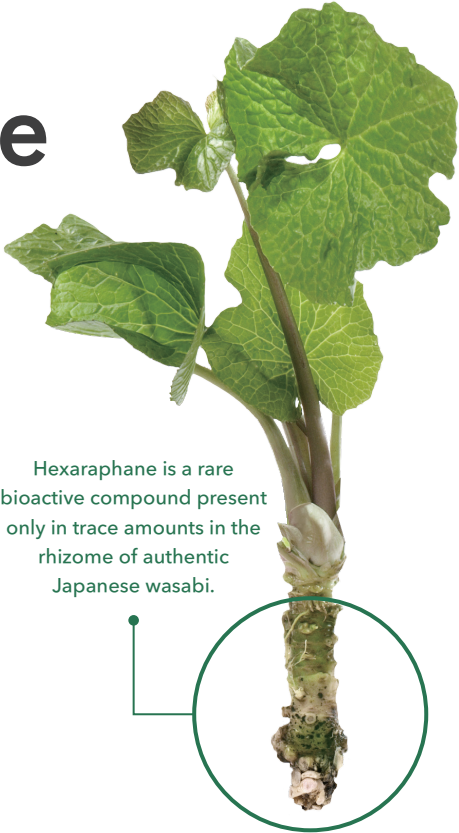
A Rare Bioactive Compound from
Authentic Japanese Wasabi

Hexaraphane

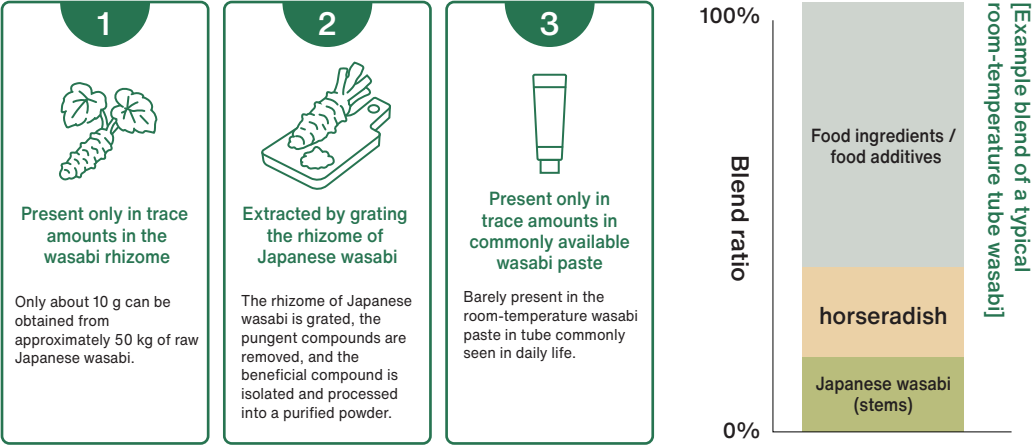
[6-MSITC : 6 - (Methylsulfinyl) hexyl isothiocyanate]

Japanese Wasabi: A Traditional Japanese Plant with Emerging Health Potential

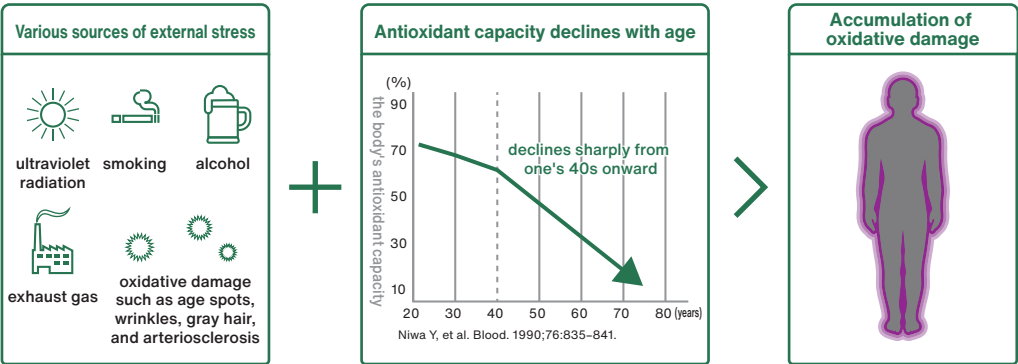
Loved for its sharp pungency and refreshing aroma, wasabi generally comes in two kinds—authentic Japanese wasabi, native to Japan, and horseradish, native to Europe. In recent years, a growing body of research has highlighted the potential health benefits of Japanese wasabi. Behind them is hexaraphane (6-methylsulfinylhexyl isothiocyanate, 6-MSITC), present only in trace amounts in the rhizome of Japanese wasabi.



Characteristics of hexaraphane



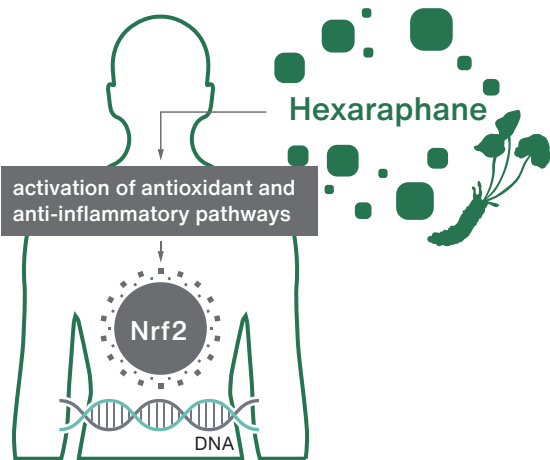
The body's antioxidant capacity declines with age



Our cells are exposed daily to “oxidative stress” from reactive oxygen species (ROS), ultraviolet radiation, and more. To protect cells from such external stress, the body is equipped with antioxidant defenses, and antioxidants help support this function. The body's antioxidant capacity gradually declines with age, dropping sharply from the 40s onward.

Hexaraphane may activate the antioxidant and anti-inflammatory functions that cells inherently possess

To counter various forms of oxidative stress, cells are equipped with a system known as Nrf2. Nrf2 is a “master regulator of cellular defense” that simultaneously activates multiple genes involved in antioxidant, detoxification, and anti-inflammatory action. When the Nrf2 pathway is activated, cells produce protective enzymes that enhance their natural defense mechanisms.



How is it different from other antioxidants?

When you hear “antioxidant,” many people think of vitamin C or polyphenols. These are “scavenging-type” antioxidants that help neutralize reactive species after they are formed, whereas hexaraphane can be described as a “suppression-type” antioxidant that makes oxidation itself less likely to occur.



Hexaraphane

suppression type



makes oxidation itself less likely to occur



Vitamin C and polyphenols

scavenging type

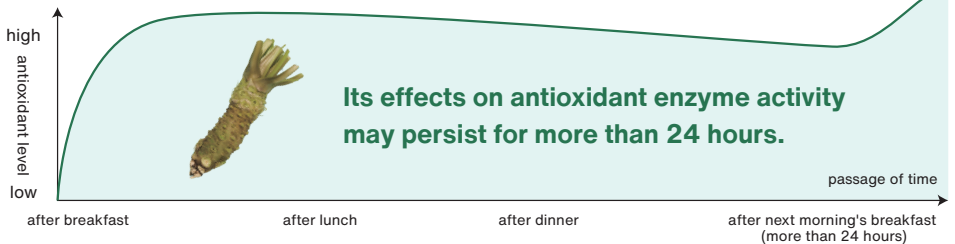


go and neutralize oxidation that has occurred

Hexaraphane helps sustain antioxidant enzyme activity.

Hexaraphane

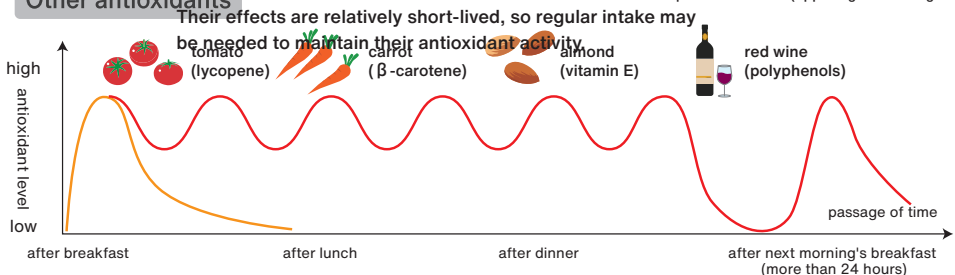
Conceptual illustration (upper right of the figure)



Morimitsu Y, et al. J Biol Chem. 2002;277:3456–3463.

Other antioxidants

Conceptual illustration (upper right of the figure)

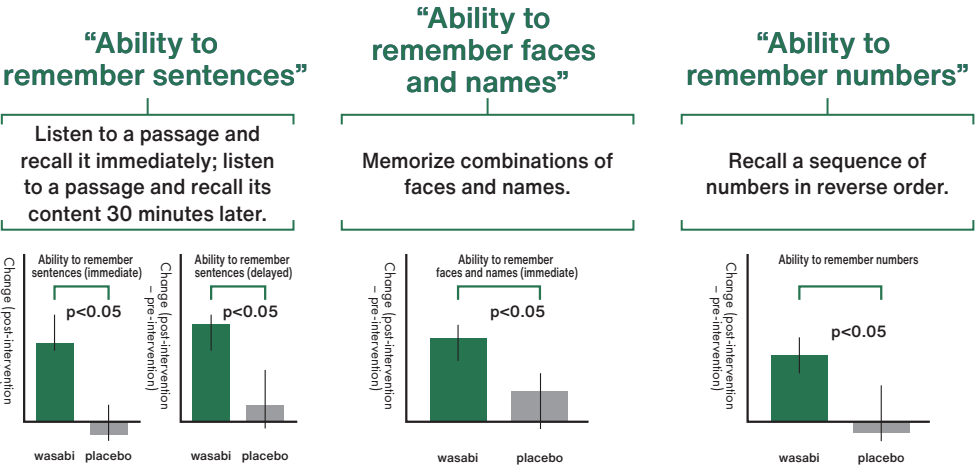


Research evidence on hexaraphane ①

Improvement in memory function observed in healthy older adults

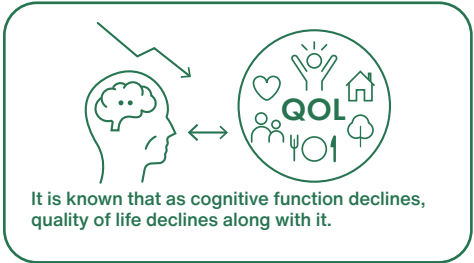
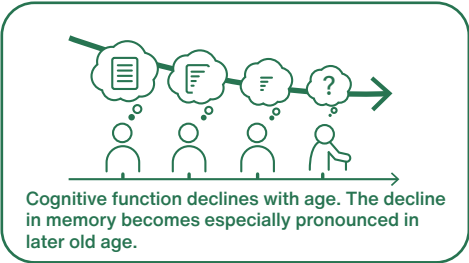


A randomized controlled trial involving 72 healthy adults aged 60 or older examined the effects of Hexaraphane on cognitive function. Compared with the placebo group, the Hexaraphane group showed significant improvements in several memory-related measures.



Study overview / citation	
Study design	Double-blind randomized controlled trial (RCT)
Subjects	72 healthy men and women aged 60 or older (wasabi group: 36 / placebo group: 36)
Intervention / method	Took a supplement containing 0.8 mg/day of hexaraphane (6-MSITC) for 12 weeks
Evaluation items	Memory function (verbal memory, face-name memory, working memory, and other cognitive tasks)
Research institution	Professor Rui Nouchi, University of Human Environments, and colleagues (Tohoku University at the time of the study)
Reference	Nouchi R, et al. Nutrients. 2023;15:4608.

Cognitive decline is closely linked to quality of life (QOL).



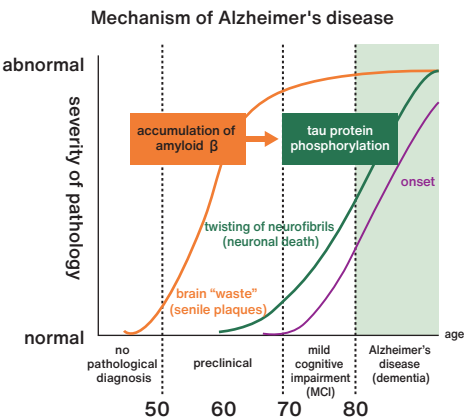
Research evidence on hexaraphane ②

p-tau217, a potential early biomarker of Alzheimer's disease, decreased

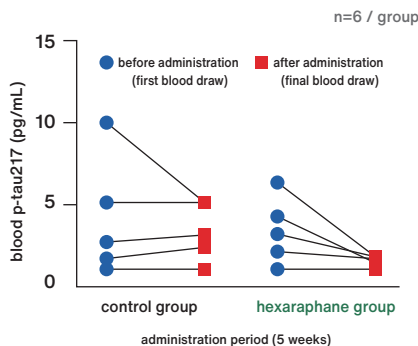
Study in a Mouse Model of Alzheimer's Disease



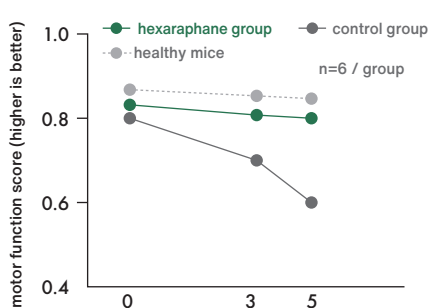
“p-tau217” is a substance that has recently drawn attention as a clue to detecting the early stages of dementia. Administration of hexaraphane was found to reduce p-tau217 in the blood. Beyond this, significant changes were confirmed, including improved memory, recovery of motor ability, and reduced inflammation in the brain. In this preclinical study, Hexaraphane was reported to reduce tau-related markers in both the brain and blood.”



Change in blood p-tau217 (individual trajectories)



Suppression of decline in motor ability



Study overview / citation

Study design	Preclinical study (in vitro cell study + in vivo animal study)
Subjects	APP/TAU transgenic mice (Alzheimer's disease model), 10 months old
Intervention / method	Hexaraphane (6-MSITC) 100 mg/kg administered by oral gavage (3 days/week × 5 weeks)
Evaluation items	Brain phosphorylated tau (AT8, PHF1), PP2A activity, blood p-tau217 (Simoa), cognitive function (novel object recognition), motor function (treadmill A-score), synaptic plasticity (LTP), neuroinflammation markers, amyloid plaques
Research institution	Dr. García-Yagüe, Autonomous University of Madrid, and colleagues
Reference	García-Yagüe AJ, et al. Redox Biology. 2026;92:104107.

Research evidence on hexaraphane ③

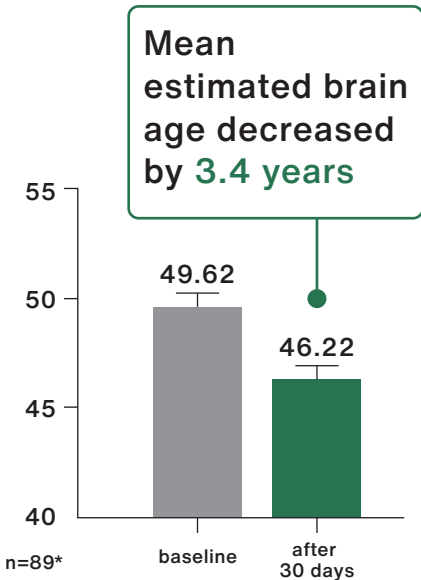
An average 3.4-year decrease in estimated brain age was observed after 30 days



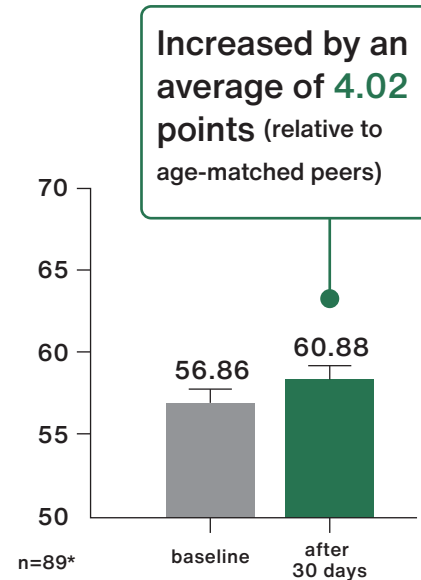
89 middle-aged and older men and women took an online test that checks, through questions on memory, calculation, spatial processing, and more, whether the brain's cognitive function is age-appropriate. After taking hexaraphane for 30 days, their mean estimated brain age decreased by 3.4 years, and their standardized score relative to age-matched peers increased by an average of 4.02 points.

*Estimated brain age calculated by comparison with reference data from 5,000 healthy participants.

[Estimated brain age]



[Standardized score]



Study overview / citation

Study design	Open-label single-arm before-after study (open-label trial)
Subjects	Men and women aged 40 or older; 89 valid responses
Intervention / method	Took hexaraphane (6-MSITC) 1.6 mg/day for 30 days
Evaluation items	Estimated brain age measured with the online cognitive test "Noken"
Research institution	Brain Activity Research Institute (Nokatsu Soken)
Reference	Unpublished, in-house data

Research evidence on hexaraphane ④

Alleviated neurocognitive symptoms of chronic fatigue syndrome



A study was conducted in 15 men and women aged 20–58 with myalgic encephalomyelitis / chronic fatigue syndrome (ME/CFS), a condition marked by persistent severe fatigue, to examine the effectiveness of hexaraphane. As a result, improvements in the following neurocognitive symptoms were reported before and after taking hexaraphane.

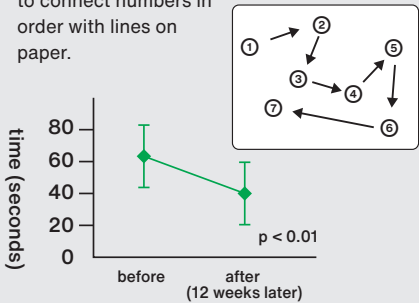
In addition, as an objective measure, the TMT-A test assessing cognitive processing speed was administered, showing improvement in cognitive processing speed.

Subjective symptoms of ME/CFS patients improved

- Degree of brain fog
- Frequency of headaches
- Frequency of muscle pain
- Degree of inability to put thoughts into words
- Degree of photophobia (sensitivity to bright light)

Test assessing cognitive processing speed (TMT-A)

Measures the time taken to connect numbers in order with lines on paper.



Study overview / citation

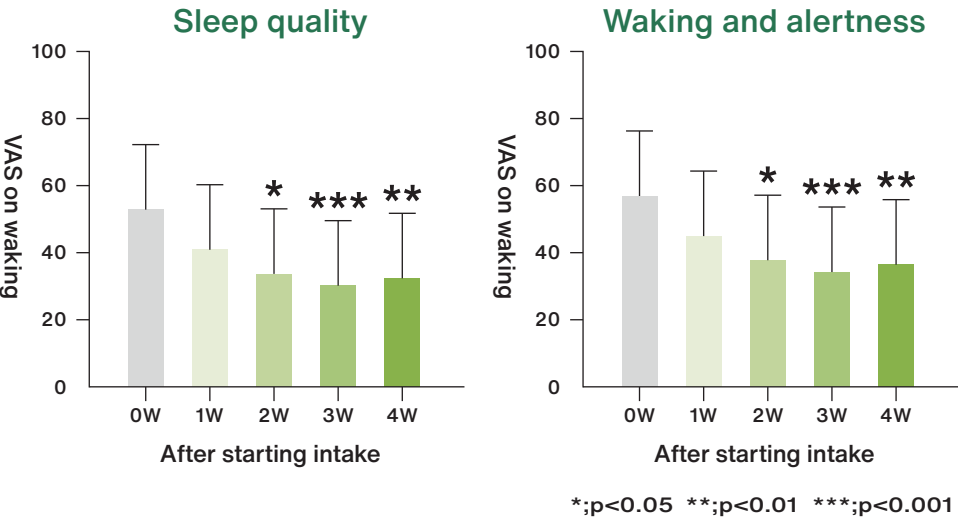
Study design	Open-label single-arm before–after study (open-label trial)
Subjects	15 patients with ME/CFS (3 men / 12 women, aged 20–58); all had shown little improvement despite continuing conventional treatment for 3 months or more
Intervention / method	Oral intake of wasabi extract containing 9.6 mg/day of hexaraphane (6-MSITC) for 12 weeks
Evaluation items	Performance Status, self-assessment questionnaire, occipital pressure-pain threshold, Trail Making Test-A, hemodynamics on standing test (compared before and after)
Research institution	Professor Takakazu Oka, International University of Health and Welfare, and colleagues
Reference	Oka T, et al. Biopsychosoc Med. 2022;16:26.

Research evidence on hexaraphane ⑤

Potential Improvement in Sleep Quality in Healthy Adults



20 healthy men and women took hexaraphane to examine its effects on fatigue and sleep. As a result—though based on participants' subjective assessments—improvements in sleep quality and morning alertness were observed from approximately 1–2 weeks after starting intake, and the effect persisted throughout the intake period.



Study overview / citation

Study design	Open-label single-arm before–after study (open-label trial)
Subjects	20 men and women aged 35 to under 60 who were aware of everyday fatigue
Intervention / method	A hexaraphane (6-MSITC)-containing supplement (1.6 mg/capsule), 3 capsules/day (4.8 mg/day), for 4 weeks
Evaluation items	Subjective assessment of sleep quality and morning alertness via VAS on waking (measured weekly after starting intake)
Research institution	Ryota Nakajima, NOMON Co., Ltd., and colleagues
Reference	Nakajima R, et al. Biopsychosoc Med. 2023;17:30.

Safety Evaluated in Multiple Human Studies

Hexaraphane is a compound derived from Japanese wasabi, which has a long history of consumption in Japan. In addition to this history, its safety has been confirmed in multiple human studies.

0.8 mg/day × 12 weeks

No adverse effects *1

4 mg/day × 4 weeks

Safety confirmed *2

9.6 mg/day × 12 weeks

No serious adverse effects *3

16 mg/day × 4 weeks

No serious adverse effects; blood test results also normal *4

※1 Nouchi R et al., *Nutrients*, 2023 ※2 Ito S et al., *Food Sci. Technol. Res.*, 2020
※3 Oka T et al., *BioPsychoSocial Medicine*, 2022 ※4 Nakajima R et al., *Biopsychosocial Medicine*, 2023

FAQ

Q1 What is hexaraphane?

A It is a rare compound found mainly in the rhizome of Japanese wasabi. Various studies have reported antioxidant and anti-inflammatory activity.

Q2 Does hexaraphane have benefits other than antioxidant and anti-inflammatory action?

A Yes. In human studies, improvements in sleep quality and ease of waking have been reported. In cell and animal studies, it has also been reported to enhance the activity of enzymes that break down the components of alcohol. Future research will help clarify its effects in humans.

Q3 Why is antioxidant action important?

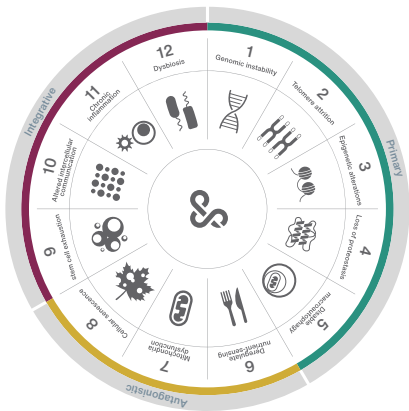
A When reactive oxygen species increase excessively, they damage cells and cause aging and disease. Antioxidant action helps prevent this, but because the body's antioxidant capacity declines with age, it is important to take deliberate steps to support antioxidant defenses.

Q4 How should I take it?

A You can obtain hexaraphane by grating the rhizome of Japanese wasabi. The daily reference intake is 5 g (about one mound of grated wasabi).

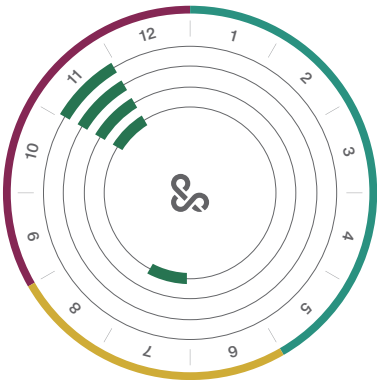
Research on nutrients based on the 12 Hallmarks of Aging

We use the 12 Hallmarks of Aging, a widely recognized framework in aging research, as the framework for our research. Hexaraphane has human evidence for the 11th hallmark, chronic inflammation, and molecular-level evidence for the 7th, mitochondrial dysfunction, and is being studied for its potential role in healthy aging.



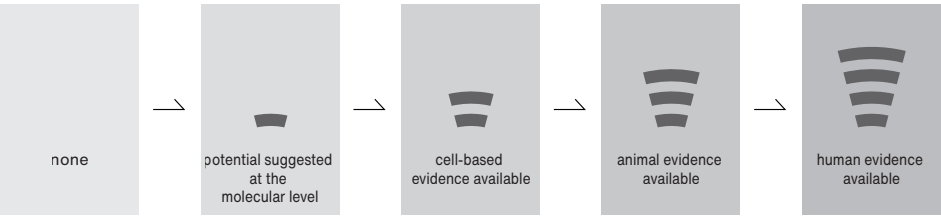
The 12 Hallmarks of Aging
AGING HALLMARKS

WITH NOMON & Co.



Hexaraphane

[Scoring definition] For each ingredient with potential relevance to healthy aging, evidence is scored based on published research and our own data using the following criteria.



For more detailed information about hexaraphane (6-MSITC), learn more here

NOMON & Co. Official Website nomon-and.com/lineup/hexaraphane



LIFE IS LONG.

Customer Support — Email

info@nomon-and.com

NOMON & Co., Ltd.

|

2-1 Yonbancho, Chiyoda-ku, Tokyo

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