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ABBACi

アラプラス

免疫アップ

Menekitup

OPTIMUM ENERGY, OPTIMUM IMMUNITY



**A NATURAL & SAFE option to BOOST
your body's immune functionality!**

安心安全な自然由来の5-ALAがあなたの
体の免疫機能を高める!



日本製

Made in Japan

SBI Pharma

Innovator health product developed by SBI Pharmaceuticals Co., Ltd.

Optimum Energy, Optimum Immunity

EVERYTHING, INCLUDING THE HUMAN BODY IS MADE OF ENERGY

Energy produced from food in the human body is used to maintain the body's essential functions (e.g. cell growth and repair, respiration, blood transport) and perform physical tasks including work, exercise and recreational activities. Lack of energy leads to various disorders and aging of the body.

*“ENERGY IS OUR SOURCE OF
HEALTH, BEAUTY AND VITALITY
THAT IS INDISPENSABLE FOR US
TO CONTINUE TO SHINE.”*



EMBRACE THE 100-YEAR LIFE ERA

人生100年時代と言

One of the greatest accomplishments of modern medicine is human longevity. 100-year Life Era is coming inevitably as more and more people wish to live with better health and vibrant lives instead of just living longer without enjoying the quality life towards geriatric stage.

Living healthily and enjoying better quality of lives are the goals and visions of bioscience in the new era. In such an era, the power of 5-ALA should always be useful, and we deliver 5-ALA series of product range with that unwavering belief.

Longevity goes hand in hand with good health.



5-ALA ~ THE SOURCE OF LIFE

生命の根源物質



5-ALA
THE SOURCE OF LIFE
生命の根源物質

WHAT IS 5-ALA?

5-ALA refers to 5-AminoLevulinic Acid. 5-ALA, which is produced in the cells of various organisms, is also known as the "Source Of Life," as it is deeply involved in the birth of life.

For over 3.6 billion years, this naturally occurring amino acid is produced in various living organisms, such as plants and animals. It is the catalyst for photosynthesis in plants and maintains energy production and moisture retention in animal and human cells. It is said to be the "source substance of life" because it can support the energy production of animals and plants.

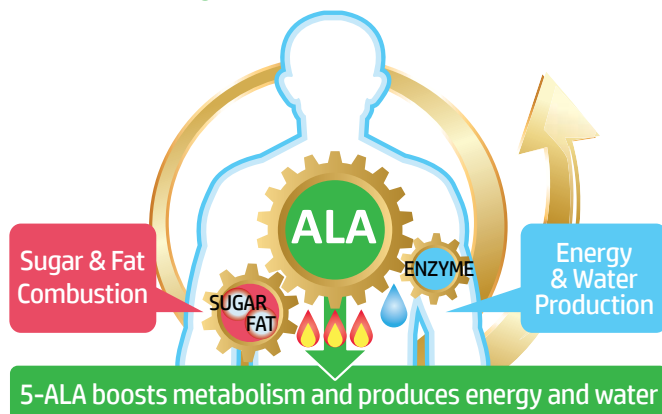
5-ALA is made in the mitochondria of human cells. Mitochondria are our internal "energy production factories" that generate energy in the form of adenosine triphosphate (ATP) from oxygen and glucose. 5-ALA plays a vital role in enhancing mitochondrial function.

THE ROLE OF 5-ALA

There is only one role for 5-ALA in the human body, as precursor of Heme (haem). Heme, formed by a combination of eight 5-ALAs, is the key to a number of vital activities. Apart from serving as key functional substance for formation of red pigment (haemoglobin) in the blood which distributes oxygen throughout the body, heme is also the central substance in the respiratory chain complex that produces energy from food and oxygen. Without 5-ALA, we would not be able to gain energy or even move.

Function of 5-ALA (inside the body)

5-ALA turns the gear of metabolism and metabolizes



In our body, energy is produced by the oxygen & nutrients we get from our diet. Energy is essential for moving all the tissues of the body, and lack of energy leads to various disorders and aging of the body. In other words, 5-ALA can be said to be a source of health, beauty, and vitality that is indispensable for us to keep on going.



5-AMINOLEVULINIC ACID

5-ALA has 60 patents over 35 countries worldwide.
Supported by clinical studies conducted across Japan, UK, USA and UAE.



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Protect Yourself & Your Family From Virus & Disease

METABOLISM IMPROVEMENT

More than 90% of ATP, which is the energy required for human activity, is produced by the organelle called mitochondria.

When mitochondrial function declines due to aging & etc., it becomes difficult for energy to circulate in the body. As a result, the body is more susceptible to diseases caused by poor metabolism & immune system, such as aging and adult diseases. However, clinical studies have shown that ingestion of 5-ALA activates mitochondrial function. From this, 5-ALA is expected to improve metabolism and improve diseases caused by decreased metabolism.



WHAT DO MITOCHONDRIA DO?

- ✓ Energy Production
- ✓ Rejuvenate Cells
- ✓ Regulation of Innate Immunity

Based on human clinical research, by further supplementing diets with 5-ALA, the ability to generate ATP is enhanced.^[16-17] It is ATP that is used as an energy source for our bodies' vital activities. The study results showed that energy (ATP) production is enhanced by the administration of 5-ALA phosphate with sodium ferrous citrate (SFC), that compose the product formulation of Meneki Up.



5-ALA HELPS BOOST & STRENGTHEN OUR IMMUNE SYSTEM

5-ALA was reported to show anti-inflammatory effects in human, it can be an effective therapeutic to the severe cases due to the combination of the antiviral activity and anti-inflammatory effects.^[14-15] In other words, it helps to safeguard your immune system by minimizing the infectious risk or morbidity from infection and inflammation.

Clinical Study shows promising result that 5-ALA can be expected to have various effects, including prevention & significantly reduce the risk of infection by the new coronavirus.^[10-15] It was found that when this substance called heme adheres to the surface of the new coronavirus, it makes it difficult to invade cells in the body. This can prevent the virus from multiplying in the body, and can be expected to be effective in preventing infection by the new coronavirus.

*“IN THIS PANDEMIC ERA,
PREVENTION IS
BETTER THAN CURE.”*





ABOUT MENEKI UP

Meneki Up formulated with 5-ALA phosphate coupled with sodium ferrous citrate (SFC), is a Natural & Safe option to Boost your body's immune function. It is a dietary supplement that are presently available and safe for humans.

Meneki Up can support immune function to result in the amelioration of viral infection, respiratory health and helps relieve flu symptoms. It is also specially formulated to support immune function to result in the prevention and treatment of viral influenza. A necessity to safeguard the immunity level in this pandemic era.

Supported by clinical studies conducted across Japan, UK, USA and UAE with 60 patents across 35 countries, those scientific studies at renowned institutions have confirmed that the active ingredient of 5-ALA in Meneki Up, has the amazing ability to enhance and strengthen your immune system.



**Convenient dosage
with 1 capsule daily.**

Vegan-friendly.

The Ultimate Immunity & Vitality Support

アラプラス

免疫アップ



MenekiUp



日本製
Made in Japan



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免疫アップ MenekiUp^{ALA PLUS+}

***“A NATURAL & SAFE option
to BOOST your body’s
immune functionality!”***

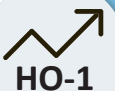
安心安全な自然由来の5-ALAがあなたの体の免疫機能を高める!

WHAT DOES MENEKI UP DO?

Meneki Up keeps the body’s immunity levels at tip-top condition by:



Fixing the 5-ALA shortage in our bodies.



Boosting Heme Oxygenase-1 (HO-1) enzyme production.



Increasing immune system’s antiviral and anti-inflammatory capabilities.



Help fights symptoms of influenza & other viral infections.



GENERAL BENEFITS OF MENEKI UP:

- Boosts Immune Support & Vitality
- Daily Maintenance to Stronger Health
- Strengthening the body
- Helps relieve general inflammation
- Helps relieve general tiredness and weakness



Boosting HO-1 Enzyme Production



WHY IS HEME OXYGENASE-1 (HO-1) SO IMPORTANT?

Heme is formed by eight molecules of 5-ALA. Heme itself is the substrate for HO-1 induction (upregulation) in the body. In a study, it showed that increases in HO-1 protein expression and activity have clear anti-inflammatory and antioxidant effects and can protect tissues, organs, and entire animal models from septic shock, oxidative injury, and hypoxia.^[1]

Heme Oxygenase-1 (HO-1) is an enzyme that catalyzes the degradation of heme. HO-1 degrades heme into iron along with biliverdin/ bilirubin and carbon monoxide (CO) that have anti-oxidative and anti-inflammatory properties to protect cells from various stresses, suggesting that HO-1 may play a vital role in maintaining cellular homeostasis.

Also, activated HO-1 was recently shown to have antiviral activity.^[1] HO-1 is a major anti-inflammatory enzyme and a key regulator that induces immune tolerance.^[2] Hence, it is suggested that antioxidants produced by HO-1 are crucial to act as 'shield' to protect the body from the harmful free radicals resulting from a severe illness and pathogenic infections that can be fatal, that we called cyto-protective function (TOP).

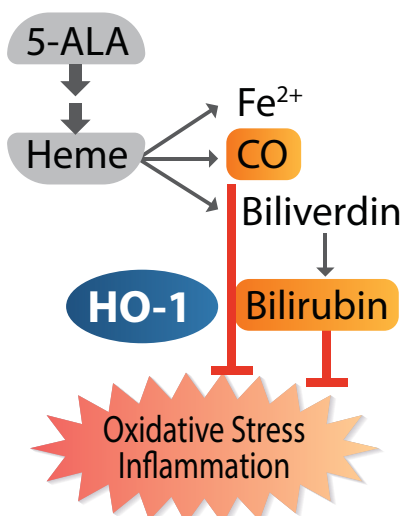
Many researches are in the process of testing 5-ALA Phosphate (5-ALA-P) for other indications and applications. 5-ALA-P/SFC enhances the induction of HO-1, and HO-1 is involved in modulation of antiviral effects for many viruses like influenza, HIV, Zika, Ebola and Dengue.^[4-9]

In addition, it was recently reported in Japan that 5-ALA-P inhibited infection of SARS-CoV-2, a causative agent of COVID-19, in cell culture, and the antiviral effects could be detected in human and non-human cells without significant cytotoxicity.^[10] 5-ALA-P/SFC was also safely administered to COVID-19 patients and has positively influenced their time to recovery.^[11]

Notes: Cyto- comes from the Greek 'kýtos'. In medical and biology term, it refers to 'of a cell(s) or pertaining to cell(s)'.

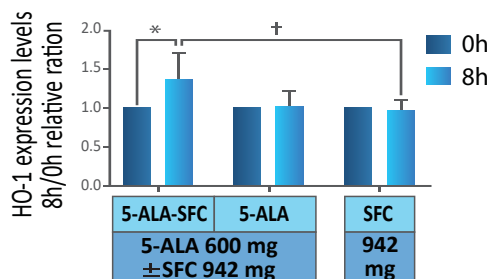
CELL PROTECTION FUNCTION OF HO-1 (Heme Oxygenase 1)

Heme decomposition produces CO, & Bilirubin with antioxidant & anti-inflammatory properties



Takeda, T.A. et al. Biochim. Biophys. Acta Gen. Subj. 2017, 1861: 1813-1824

5-ALA + SFC induces HO-1 expression



SFC: Sodium Ferric Citrate

Ito et al. Eur J Pharmacol. 2018;833: 25-33

Administration of 5-ALA-P + SFC induces HO-1 expression to produce Anti-oxidative Substances



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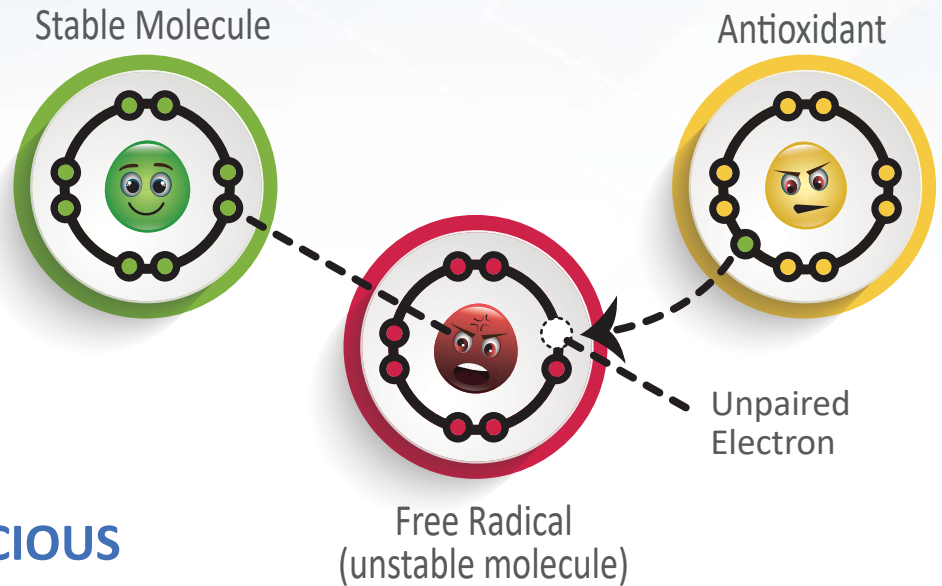


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5-ALA ~ A Strong Antioxidant

HOW ANTIOXIDANT REDUCE FREE RADICALS

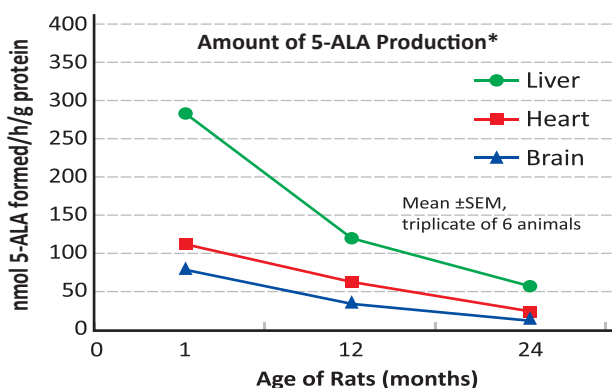
5-ALA ~ AN ANTIOXIDANT PRECIOUS TO PRESERVE HEALTH



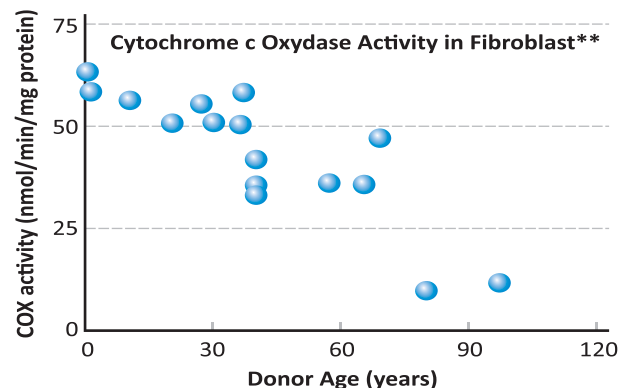
Antioxidants play an important role in overall health. They are natural compounds found in some foods that help neutralize free radicals in our bodies. Free radicals are substances that occur naturally in our bodies but attack the fats, protein and the DNA in our cells, which can cause different types of diseases and accelerate the aging process.

Production of 5-ALA peaks at the age of 17 and declines gradually after. Similar decline in the responsive level of immune function somehow can be observed due to aging. The strength of our immune response decreases as immune cells become sluggish to heal the body.

5-ALA production ability decreases with ages.



Enzymes required for aerobic respiration (COX) also decreases with ages.



* Based on data from Paterniti *et al* (1978) *Arch. Biochem. Biophys.* 191, 792-797
 ** Traced and modified from Jun-Ichi Hayashi *et al* (1994) *J Biol. Chem.* 269, 6878-6883

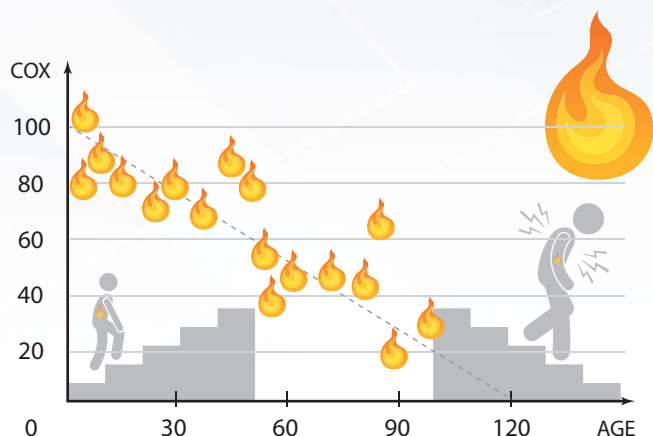
"5-ALA ~ RICH IN ANTIOXIDANTS,

*keep your body's cells healthy by combating damage
caused by free radicals"*



AGING VS ENERGY DECLINE

As we age, our body's ability to produce 5-ALA declines. Stress and lifestyle-related disorders are also leading to one of the main causes of the decrease in 5-ALA.



* The COX activity in skin fibroblasts collected from humans is used as an index of 5-ALA production. Estimated with the value of 0-year-old child as 100.

Traced and modified from Jun-Ichi Hayashi et al (1994) J Biol. Chem. 269:6878-6883

Free radicals are associated with human disease, including cancer, atherosclerosis, Alzheimer's disease, Parkinson's disease and many others. They also may have a link to aging, which has been defined as a gradual accumulation of free-radical damage, according to Christopher Wanjek, the Bad Medicine columnist for Live Science.

Substances that generate free radicals can be found in the food we eat, the medicines we take, the air we breathe and the water we drink, according to the Huntington's Outreach Project for Education at Stanford University. These substances include fried foods, alcohol, tobacco smoke, pesticides and air pollutants.

Free radicals are the natural byproducts of biochemical or chemical processes. Dr. Lauri Wright, a registered dietitian and an assistant professor of nutrition at the University of South Florida, said, "Basically, I think of free radicals as waste products from various chemical reactions in the cell that when built up, harm the cells of the body."

5-ALA has a strong antioxidant effect (the effect of eliminating ROS) by inducing HO-1 and producing bilirubin and carbon monoxide.^[18] 5-ALA substance with its anti-oxidative properties may counteract free radicals and help address a lot of sub-health problems.

LEADING CAUSES TO ENERGY DECLINE



The body is under constant attack from oxidative stress. Oxygen in the body splits into single atoms with unpaired electrons. Electrons like to be in pairs, so these atoms, called free radicals, scavenge the body to seek out other electrons so they can become a pair. This causes damage to cells, proteins and DNA.

What is Sub-Health (SHS)?

SHS - A health condition defined by the World Health Organization as a state between health and disease when all necessary physical and chemical indexes are tested negative by medical equipments, things seem normal but the person experiences all kind of discomfort and even pain. Sub-health is a grey state of health. It may be characterised by weakened immune system.

Common symptoms of SHS, common symptoms: Insomnia, runny nose particularly in the morning, constipation, frequent urination, hair loss, irritability, poor appetite, tidal fever, palpitation etc

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Comparison of 5-ALA content in Ginseng VS Meneki Up Capsule

400 Ginseng Roots
= 50mg 5-ALA

1 Convenient Capsule
= 50mg 5-ALA



*For Illustration Purpose Only

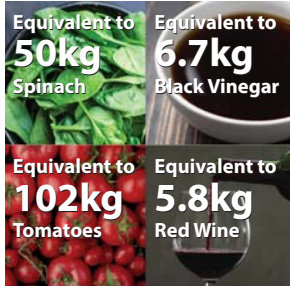
How to supplement 5-ALA with food ?

5-ALA is contained in green-yellow vegetables and fermented foods that are said to be good for the human body and health, but only a very small amount can be absorbed from the daily diet.

5-ALA can ingest about 150 kg or more of tomatoes and about 93 kg or more of spinach in one capsule .

How to take 5-ALA 10mg from food ...

ALA content in food [μg / 100g]



FOOD	5-ALA [μg]	FOOD	5-ALA [μg]
Potato	7.0~9.0	Cucumber	2
Tofu	1	Napa Cabbage	0.7
Natto	25	Crown Daisy	5.2
Soy Sauce	22	Apple	0.8
Sauce	21.2	Banana	31.6
Sake	70~353	Kyoho Grape	13.6
Wine	110~173	Salmon & Trout	0.2
Mushroom	5~45	Tuna (Lean)	0.8
Black Vinegar	150	Squid	38.4
Soybean	5~7	Octopus	78.4
Carrot	0.8	Minced Beef	9.8
Spinach	13.8	Beef Rib	0.8
Pepper	18.1	Minced Pork	5.6
Tomato	9.8	Minced Chicken	4.3
Onion	1.1	Kelp	0.7
Cabbage	1.3		

Reference: Heme-constituting amino acid 5-ALA (5-aminolevulinic acid)-Current status of fermentation production, metabolism, and application development-Table 2 Amino acid research Vol.6, No.1, (2012)

User: 2nd ALA Science Forum Activity Report

Therefore! Various functions of 5-ALA have been confirmed in 5-ALA combination of ALA PLUS series proven clinical trials.

100% BIOAVAILABILITY ABSORPTION RATE



Balanced Immunity, Balanced Lifestyle

持続する優れた免疫バランス

Keeping your immune system well-balanced

As we age, the effectiveness of your immune system deteriorates. Our immune system acts like an insurance policy against an arsenal of outside forces, including infectious bacteria or viruses, poor diet, stress, and even pollution that can compromise your immune system and leave you vulnerable to attack. If weakened, it may not be able to fight for you when you need it most.

IMMUNITY BALANCE

Our immune system is complex & beyond our understanding. Our knowledge of the body's immune function is continuously evolving.

Balanced immune function is essential to healthy lifestyle and well-being. Immunologic reactions are involved in most chronic disease processes including pneumonia, arteriosclerosis (diseases of the heart and vessels), arthritis, cancer, endocrine diseases and aging process in general. Maintaining a balanced immune system is one of the functional bases upon which we strengthen our health and recover from illnesses.

A strong & balanced immune system is the single most important factor for lasting, vibrant health!

AGING OF IMMUNE SYSTEM

The strength of the immune response declines with age. There are fewer immune cells in the body to bring about healing. The immune system's ability to detect and correct cell defects also declines. Yet, people with metabolic syndromes may also be linked to an aged or weakened immune function (insulin resistance, diabetes, obesity, hypertension, cardiovascular disease). Pertinently, these groups generally have lower intracellular stress protein levels including low HO-1.^[3] This can result one to be vulnerable to various infections and even diseases like cancer in long term.

Infection is a silent killer. If one's immune function is weak, one is susceptible to infection caused by a pathogen like virus or multiple infections at once, leading to inflammation. In more severe cases, secondary infection and associated complications may eventually result in morbidity and even mortality attributed to breakdown of immune system, like what happens in Pneumonia or COVID patients.

How to BOOST your Immune System



Immunity Empowerment

WHAT CAN YOU DO?

There are ways to boost immunity:

- Healthy life habits including work-life balance, be moderate with smoking and drinking
- Regular exercises or physical workouts
- Good quality of sleep
- Balanced diet that helps recuperate
- Scientifically proven safe food supplements to build up immunity
- Stay up-to-date with vaccines
- Follow all personal hygiene and infection prevention practice

Note: Know that your strong immunity will not protect you from COVID-19 unless you comply with precautionary measures.



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Healthcare Innovation to the Forefront

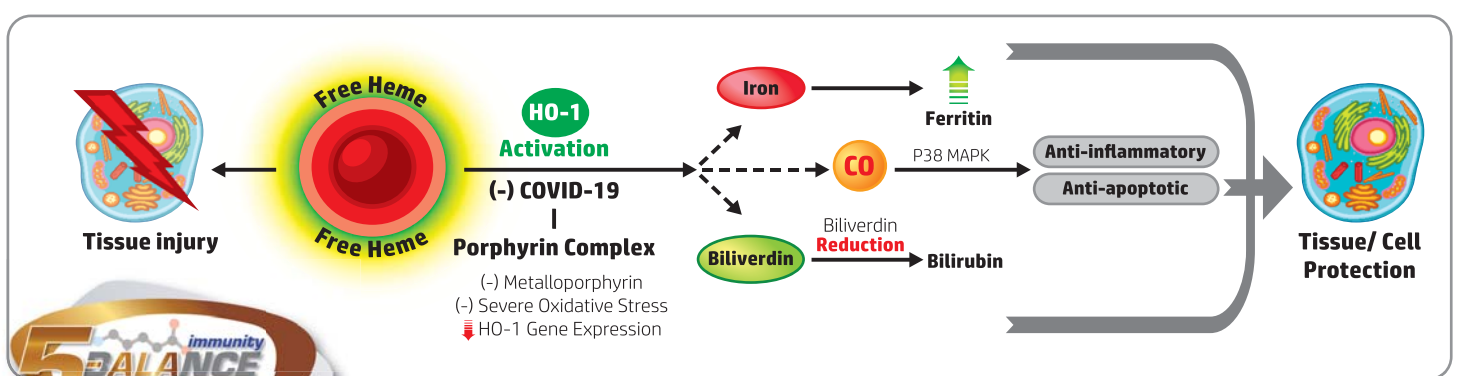
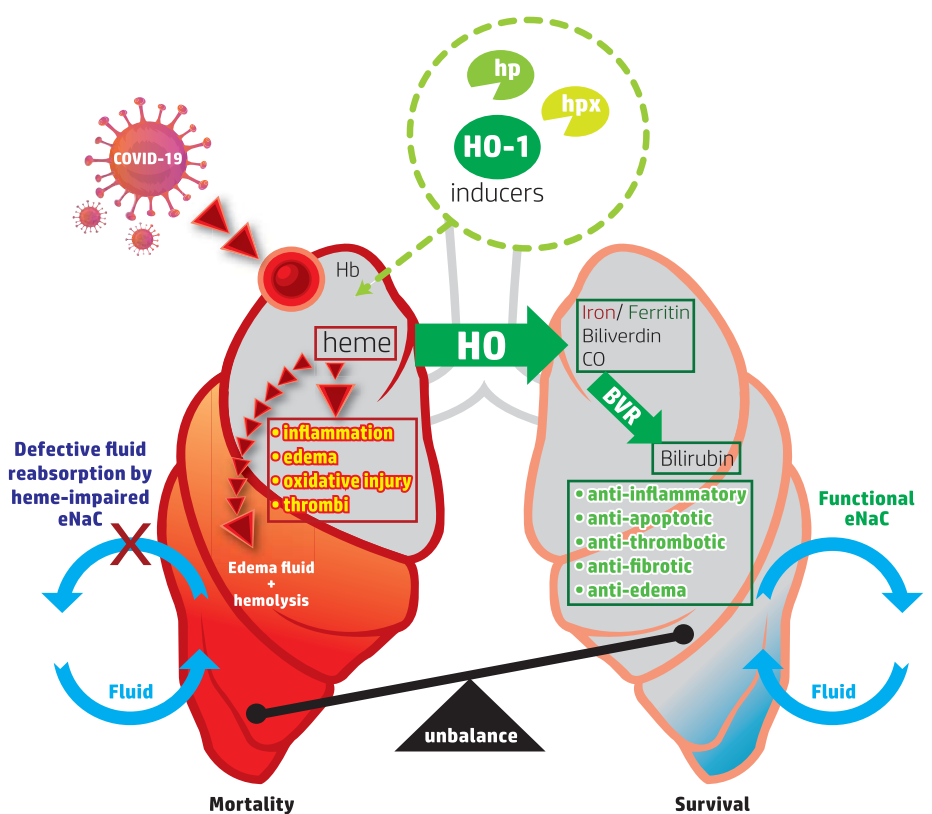
HOW DOES 5-ALA HELP FIGHT AGAINST SARS-CoV-2?

Based on the study, there are 2
types of Mechanism of Action:

Mechanism 1

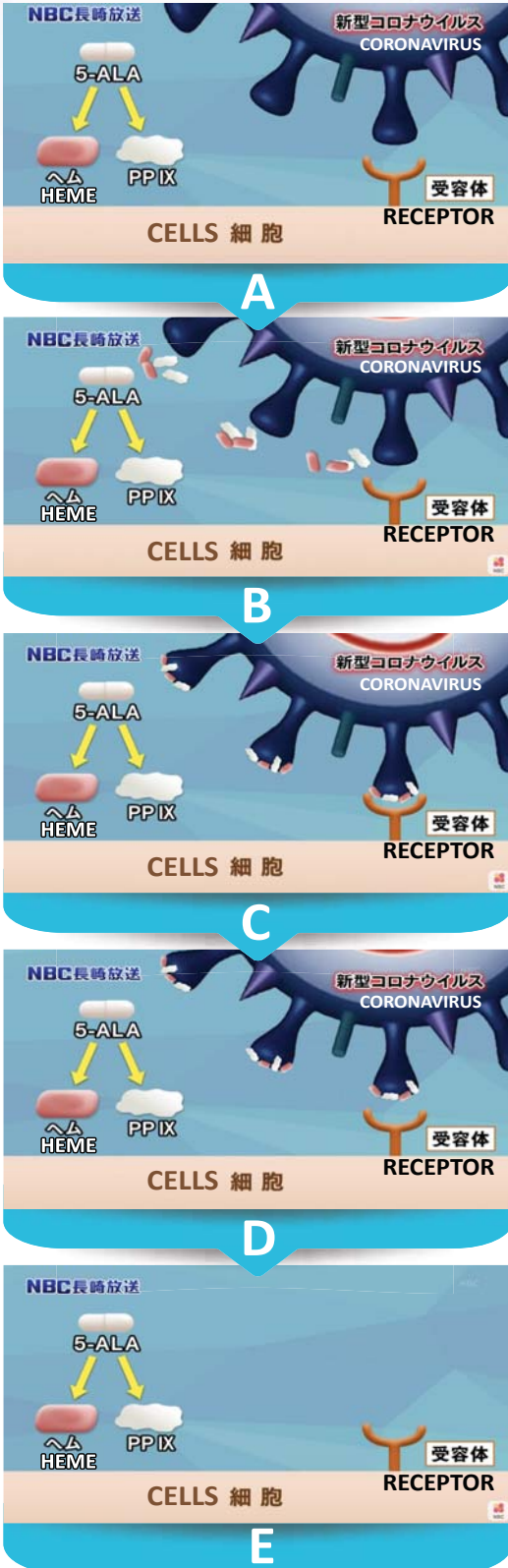
Heme oxygenase-1 (HO-1) with strong anti-infection and anti-inflammatory effects, is induced after administration of high dosage of 5-ALA Phosphate + SFC in subjects. It is suggested to prevent further infection caused by the viruses.

(*Refer to website links [12] & [13])



Mechanism 2

Metabolites of 5-ALA (ie. Heme and PpIX) have affinity to G4 structure (G-quadruplex) of genome domain of the viruses like COVID-19. These metabolites will interfere in the ligand binding for replication of the virus. Therefore, it is suggested that it can prevent and cease further viral replication and infection in the host, through supplementation with 5-ALA. (*Refer to website links [14] & [15])



A 5-ALA supplementation induces production of Heme and Protoporphyrin X (PpIX).

B These 2 types of metabolite bind to the domain of the spiky structure of a Coronavirus (spike protein). The spike protein is a multifunctional molecular machine that mediates Coronavirus entry into host cells.

C Coronavirus with heme or PpIX attached is not able to bind to the receptor (ACE-2) of the host cell surface.

D Viral attachment is not successful due to failing to recognise the host receptor. Conformational transition (prefusion and postfusion) of the spike protein cannot be triggered, membrane fusion does not happen.

E Failure in receptor recognition and membrane fusion hinders / stops viral replication in the host.

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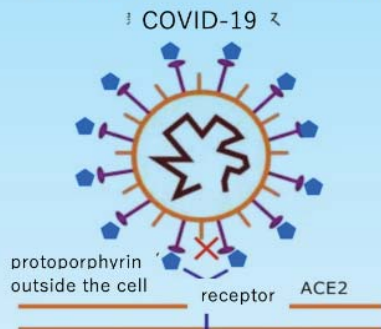
Scientific Evidences

Mechanism of infection inhibition

Suggested efficacy against COVID-19 including variant strain and other virus

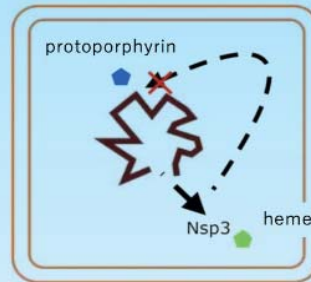
※When 5-ALA is administered at above certain quantity

1. Binding inhibition of spike protein



Protoporphyrin IX, generated from 5-ALA, binds to spike protein of the virus, which inhibits the binding of the virus to the receptor ACE2. As a result, the entry of the virus into the cell is inhibited.

2. Transcription inhibition in cell



Protoporphyrin IX and heme, generated from 5-ALA, inhibits the binding of Nsp3 protein to the COVID-19 genome, which results in the prevention of the viral reproduction.



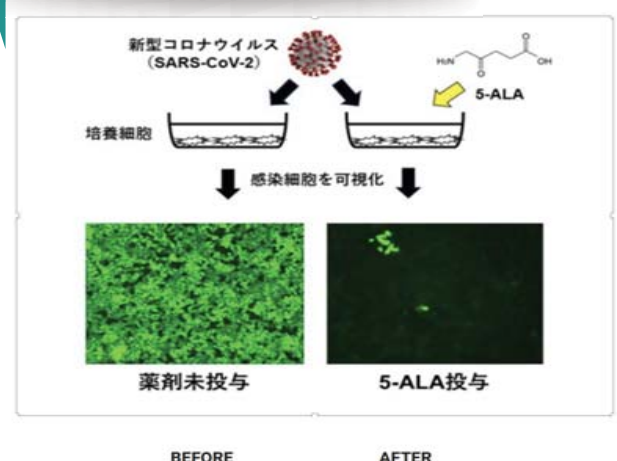
Infection rate of SARS-CoV-2 decreases drastically with increased intake amount of 5-ALA



Effect of administration of 5-ALA towards activity of SARS-CoV-2



Brief illustration about the effect of 5-ALA against SARS-CoV-2 through in vitro experiment



COVID-19 + 5-ALA capsule → Stop viral replication



ABOUT ABBACI HEALTH

ABBACI HEALTH is an ASEAN distributor company specialised in commercializing health products. ABBACI Health mainly deals with health supplements and health food sourced from Japan. The company vision is to improve people's health and quality of life with scientifically proven all-natural products. ABBACI HEALTH focuses in providing high quality products that emphasize new technology and scientifically proven safety and efficacy. Partnering with reputable SBI Pharmaceuticals Co., Ltd. (www.sbipharma.co.jp), our team is dedicated in distributing premium Healthcare and Skincare products to ASEAN Countries and Greater China.



ALA PLUS 5-ALA ~ TRUST, ACHIEVEMENTS & AWARDS



[Japan's first and only] Sales of foods with functional claims containing 5-ALA. Foods with functional claims are those that have been notified and accepted by the Consumer Affairs Agency after fully verifying the scientific basis for "functionality" and "safety". ALA PLUS continues to focus on selling functional foods containing 5-ALA in order to provide products that are more satisfying and reliable. ALA PLUS is the first and only brand in Japan to handle functional foods containing 5-ALA.

SBI Pharmaceuticals Co., Ltd. (SBI Pharma) renowned globally for its constant innovative researches and very high-quality manufactured products, is the subsidiary of the listed Japanese company SBI Group Limited. SBI Pharma has developed pharmaceuticals, cosmetics and health food products based on the 5-ALA as key active ingredient. SBI Pharma is being very determined in the effort of developing and discovering new applications with 5-ALA by conducting clinical researches worldwide.

5-ALA RESEARCH ACHIEVEMENTS

SBI Pharma has been collaborating with more than 30 universities and research institutes, including the University of Tokyo, Oxford University, and the Cancer Chemotherapy Center, to study how 5-ALA works in the body and its usefulness. The number of papers that are the result of research is more than 130, and the number of domestic patents obtained is more than 50. The usefulness of 5-ALA has been recognized not only in Japan but also among research institutes and experts around the world, and various studies are being conducted every day*. (As of October 2020)

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RELATED JOURNALS FOR REFERENCE:

- Hill-Batorski et al., The Cytoprotective Enzyme Heme Oxygenase-1 Suppresses Ebola Virus Replication, *Journal of Virology* (2013) Vol 87 No. 24
- H. Ito, Y. Nishio, T. Hara, et al., Oral administration of 5-aminolevulinic acid induces heme oxygenase-1 expression in peripheral blood mononuclear cells of healthy human subjects in combination with ferrous iron, *Eur. J. Pharmacol.* 833 (2018) 25-33
- Philip L. Hooper. COVID-19 and heme oxygenase: novel insight into the disease and potential therapies. *Cell Stress and Chaperones* (2020) 25:707-710. <https://doi.org/10.1007/s12192-020-01126-9>
- <https://pubmed.ncbi.nlm.nih.gov/29753693/>
- <https://www.jimmunol.org/content/176/7/425>
- <https://pubmed.ncbi.nlm.nih.gov/30786886/>
- <https://pubmed.ncbi.nlm.nih.gov/24109237/>
- <https://virology.biomedcentral.com/articles/10.1186/s12985-019-1125-9>
- <https://pubmed.ncbi.nlm.nih.gov/27553177/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7846235/>
- <https://osf.io/azxsm/>
- <https://clinicaltrials.gov/ct2/show/NCT04542850> (Pilot Study to Evaluate the Safety, Tolerability, and Efficacy of 5-ALA Phosphate + SFC in Subjects with COVID-19)
- <https://clinicaltrials.gov/ct2/show/NCT04854876> (Study to Evaluate the Safety, Tolerability, and Efficacy of 5-ALA-Phosphate + SFC as an Immune System Enhancer Along With Vaccination Against COVID-19)
- <https://doi.org/10.1101/2020.10.28.355305> (5-Aminolevulinic Acid Inhibits SARS-CoV-2 Infection in vitro)
- <https://www.thailandmedical.news/news/covid-19-drugs-5-amino-levulinic-acid-and-ethacridine-identified-as-potential-sars-cov-2-inhibitors-in-two-separate-studies>
- Ogura S, Maruyama K, Hagiya Y, Sugiyama Y, Tsuchiya K, Takahashi K, et al. The effect of 5-aminolevulinic acid on cytochrome c oxidase activity in mouse liver. *BMC Res Notes.* 2011;4:66.
- Shimura M, Nozawa N, Ogawa-Tominaga M, Fushimi T, Tajika M, Ichimoto K, et al. Effects of 5-aminolevulinic acid and sodium ferrous citrate on fibroblasts from individuals with mitochondrial diseases. *Sci Rep.* 2019 Jul 22;9(1):10549.
- Hou J, Cai S, Kitajima Y, Fujino M, Ito H, Takahashi K, et al. 5-Aminolevulinic acid combined with ferrous iron induces carbon monoxide generation in mouse kidneys and protects from renal ischemia-reperfusion injury. *Am J Physiol Renal Physiol.* 2013 Oct 15;305(8):F1149-57.
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 - <https://www.youtube.com/watch?v=R5DnS9jKua8>
 - <https://www.youtube.com/watch?v=v7UnRmJoPZQ>
 - <https://www.youtube.com/watch?v=I1vAPj8yjs>
 - <https://www.youtube.com/watch?v=ucbhmfbti8>
 - <https://www.youtube.com/watch?v=9Z3VTg539FO>

RELATED STUDIES:

HO-1 related studies:

- Ebola- Study: The cytoprotective enzyme heme oxygenase-1 suppresses Ebola virus replication. <http://pubmed.ncbi.nlm.nih.gov/24109237/>
- Dengue- Study: Human heme oxygenase-1 is a potential host cell factor against dengue virus replication. <http://pubmed.ncbi.nlm.nih.gov/27553177/>
- HIV- Study: Hemin Activation Ameliorates HIV-1 Infection via Heme Oxygenase-1 Induction. <https://doi.org/10.4049/jimmunol.17.6.7.4252>
- Zika- Study: Nrf2-dependent induction of innate host defense via heme oxygenase-1 inhibits Zika virus replication. <https://www.researchgate.net/publication/312145650>

5-ALA related studies:

- SARS-CoV-2 - Study: Related website links 10)- 15)
- Influenza Viruses- Patented Study: JP 5920901B2, US 9351949B2 & AU 2013291455B2 etc.
- Malaria- Patented Study: JP 5582441B2 & WO2011145343A1 etc.
- Immune Tolerance Inducer- Patented Study: US 9399029B2 & EP 2873417B1 etc.
- Inflammatory bowel disease- Patented Study: WO 2020/221827 A1

PATENT

- 5-ALA itself had obtained 60 patents over 35 countries for various type of 'inventions'.
- Supported by clinical studies conducted across Japan, UK, USA and UAE.
- The first ever state-of-the-art yet natural microbial fermentation method WITHOUT genetic recombination and harmful chemicals. (Patent No. JP 4919400)
- The remarkable method for treating diabetes with 5-ALA as an active ingredient. (Patent No. US 9,095,165 B2)
- 5-ALA is noted as 'Precious' - Hence never stop researching and discovering the untapped potential values, both therapeutic and non-therapeutic intrinsically.
- On-going clinical researches across the Asian Region, UAE, UK and US.



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The clinical studies & scientific reports content for SARS-CoV-2 is current as of the publication date. Yet additional evidence might have become available thereafter as this is a rapidly progressing area of research. Therefore, should not be regarded as conclusive. At this point in time based on the evidence of the clinical trials, 5-ALA COMPOUND is noted as biologically plausible for the increase of body's immune functionality hence prevent further infection & replication of the viruses.

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