Nucleotide Blend

A high quality blend of selected nucleotides (as soluble sodium salts) and yeast extracts (rich in RNA as soluble sodium) obtained from Saccharomyces cerevisiae and formulated to be used in food supplements to support DNA and RNA functions, energy production, cell signalling and metabolism and overall cellular health.

PRODUCT PROFILE SHEET

The Role of Nucleotides

Nucleotides are **essential molecules** in the human body; they are the building blocks of genetic information, both DNA and its working copy, RNA. Nucleotides are also part of various **signalling pathways**, enabling cells to respond to hormones such as insulin.

Due to their structure and the phosphate groups they contain, nucleotide-containing molecules are often particularly energy-rich and therefore **suitable as energy stores** – classically in the form of ATP (adenosine triphosphate), the body's universal energy carrier[1].

Why it is important to supplement Nucleotides

Most micronutrient therapies do not take into account the structural integrity and activity of DNA. The human body can usually make enough nucleotides on its own, unless demand spikes due to stress, specific health conditions, age and life stages or synthesis is impaired. In these cases, supplementing nucleotides may help and support the body's need to produce them from scratch[1,2].

Furthermore, nucleotides production is a lengthy process and requires a lot of energy and resources from the body. In addition, certain cells and organs cannot produce nucleotides themselves and depend on other sources, such as food.

Most nucleotides are found in animal products, especially intestine, liver, kidney, etc. Vegetables, fruits, on the other hand, contain very few nucleotides. Today's food processing also reduces the content of nucleotides in food, and more individuals are shifting toward vegetarianism or relying less on meat in their diets.

Product Advantages

- ✔ **Balanced Nucleotide Profile**
  the inclusion of both pyrimidine (UMP, CMP) and purine (AMP, GMP, IMP) nucleotides ensures a balanced profile, supporting multiple biological pathways
- ✔ **100% Vegan**
- ✔ **Derived from Natural Yeast**
- ✔ **Backed by Research**
- ✔ **Safe and Traceable**
  SO 22000 Certified Food Safety Management System
- ✔ **Allergen Free**
- ✔ **Kosher & Halal Certified**
- ✔ **3 Years Shelf-Life**

Research

Extensive evidence indicates that, under conditions of physiological stress, dietary sources of nucleotides are required to support **immune function**, **gut health**, **brain health**, **hepatic function**, **energy production (ATP)** and processes of **rapid cell growth**.

Furthermore, the body's requirements increase under various conditions such as **tissue injury, infection**, **disease**, or **impaired biosynthetic capacity**[2]. Research also shows potential for **exercise recovery**, especially during intense exercise, pregnancy and healthy aging.

Early-Life Stress and Recovery

Specific research on this nucleotide blend highlights the important role of nucleotides supplementation for healthy development and potentially longer life. Young animals grow quickly and can lose protective parts of their DNA, called telomeres, especially under stress. Research shows that early-life stress in humans (like malnutrition or emotional stress) is also linked to faster telomere shortening, which has been connected to earlier aging and health problems.

An animal study[3] was conducted on the Nucleotide Blend to test how two biological signals, stress hormones (glucocorticoids) and nutrients (nucleotides), affect telomere loss in growing great tit chicks. Chicks who were given stress hormones, showed telomere damage, but those given nucleotides, even alongside stress hormones, did not. Furthermore, the chicks receiving both had stronger energy production, better DNA protection, and more antioxidant activity.

The study concluded that a mix of dietary nucleotides may protect DNA during stressful growth, therefore supporting healthy development and potentially longer life[3].

Sports Recovery

Nucleotides also play an important role in exercise recovery, especially during heavy training. A study[4] tested whether a nucleotide supplement (containing this blend) could help the body recover from heavy resistance exercise. Twenty people took either a nucleotide supplement (composed of this nucleotide blend, amino acids, vitamins and other nutrients) or a placebo before doing a tough workout. Blood tests and performance were measured before and after exercise.

Those who took the nucleotide supplement had lower stress hormone (cortisol) levels, less muscle damage, and better strength recovery compared to placebo. The study concluded that nucleotide supplementation could reduce stress and muscle damage while improving recovery after intense resistance training[4].

Another study[5] investigated the effects of a nucleotide supplement (containing this blend) on metabolic and immune responses to short-term high-intensity exercise in trained males. Thirty subjects were split into control, placebo, and experimental groups. undergoing exercise tests before and after 60 days of supplementation. Saliva and blood samples were analysed for stress and muscle damage markers. Results showed reduced post-exercise cortisol and higher SIgA in the supplemented group, indicating improved immune response.

The study concluded that nucleotides when supplemented, could reduce stress hormone responses and support immune function during intense exercise[5].

Another study[6] was conducted to see if taking a nucleotide supplement for 60 days could help the body better handle stress and support the immune system during and after long cycling workouts. The researchers measured changes in saliva immune markers (SIgA) and the stress hormone cortisol to see how the supplement affected the body's response to hard endurance exercise.

Results suggested that oral intake of nucleotides may offset the hormonal response associated with demanding endurance exercise[6].

Immune Health

Talking about immune support, a randomized controlled trial[7] studied the effects of a yeast-based nucleotide supplement, on common cold symptoms in 36 adults over 28 days. Participants took either a nucleotide mix or a placebo and recorded symptom severity while saliva and blood samples were analysed. In the first week, those taking the nucleotides supplement reported significantly less sinus pain, earache, and taste loss.

No negative effects on white blood cell counts were observed. In conclusion, Supplementation with nucleotides could help reduce specific cold symptoms, especially early in the infection, without affecting immune cell levels [7].

Brain Support

In addition to the health benefits above, research shows that nucleotides are essential for brain health as they support DNA repair and cell regeneration in the nervous system, especially in brain white matter.

Deficiencies can impair nerve regeneration and increase the risk of neurodegenerative diseases like dementia. Oxidative stress and mitochondrial dysfunction reduce energy production, harming cognitive function.

Supplementing with nucleotides may support brain regeneration, reduce DNA damage and oxidative stress, enhance mitochondrial function, and boosts cognitive performance[2,8,9,10].

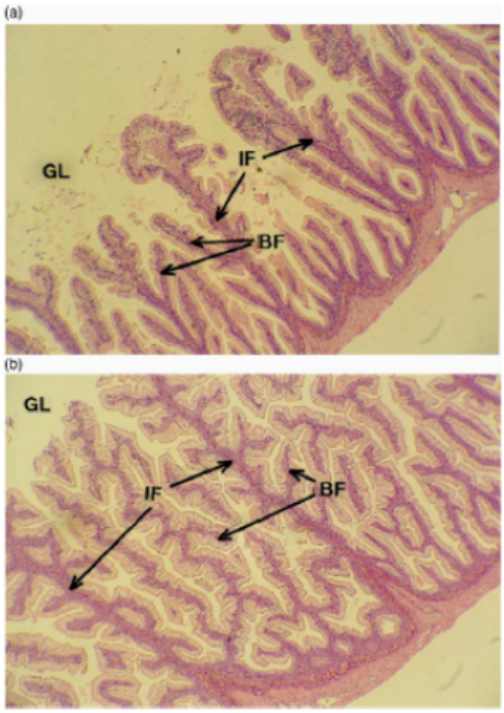
Gut Health

Studies show that nucleotides contribute to the maintenance and repair of the intestinal lining, supporting gut integrity and nutrient absorption[2,11,12,13]. This may be particularly beneficial in populations with immature or compromised digestive systems, such as infants, elderly individuals, or people recovering from illness.

A study[13] tested whether adding supplemental nucleotides (0.03%) to the diets of Atlantic salmon could improve health and performance under stressful conditions such as vaccination and transfer to saltwater. Results after 8 weeks showed that fish fed with the nucleotides showed higher antibody levels and lower mortality after disease challenge.

They also adapted better to seawater transfer, with improved osmoregulation. Growth suppression normally caused by vaccination or transfer was prevented, with nucleotide-fed fish being 8–22% heavier than controls. Improved intestinal structure, characterised by taller and more extensively branched folds (see Fig 1), is likely to have enhanced nutrient absorption and feed efficiency[13].

Figure 1
Histological Images of the Distal Intestine of Fish supplemented with Nucleotides (b) vs Placebo (a)



GL: Gut lumen; IF: Intestinal fold; BF: Branching of the fold. Magnification =70.

Manufacturing Process

The nucleotides in this blend are mixed in precise ratios to meet various health applications, ensuring a **balanced nucleotide profile.** Mixing is conducted in advanced systems under ISO 22,000 standards. Each batch is quality-checked with HPLC/UPLC to confirm identity and purity and potency assays verify the correct concentrations. Stability studies guarantee product integrity.

Product Safety

Nucleotides such as UMP, CMP, AMP, GMP, and IMP are naturally present in the human body and in many foods. Because the body produces and uses nucleotides constantly, small supplemental doses are usually well-tolerated.

Nucleotide ingredients are researched and generally considered safe for use in food, supplements, and infant formulas, when used appropriately and at recommended levels.

In clinical studies, this nucleotide blend has not shown any adverse effects.

Product Range

Ingredient	Actives	g/kg
Nucleotide Powder Blend	Uridine 5'-monophosphate disodium salt (5'-UMP Na2)	330
	Cytidine 5'-monophosphate disodium salt (5'-CMP Na2)	233
	Yeast extracts (rich in RNA Na2)	214
	Inosine-5'-monophosphate disodium salt (5'-IMP Na2)	49
	Adenosine-5'-monophosphate disodium salt (5'-AMP Na2)	39
	Guanosine-5'-monophosphate disodium salt (5'-GMP Na2)	39

Product Applications

Capsules, Tablets, Protein Powders, Drink Mixes.

Product Dosage

Based on the scientific research, we recommend 300 to 650 mg of powder per day. We advise not to exceed the recommended daily dosage.

About

LEHVOSS Nutrition is the European division of the Hamburg based group LEHVOSS, specialising in the sourcing, technical approval, sales and marketing of specialty ingredients for the food supplement, pharma, animal nutrition and functional foods.

References

1. Nucleotides – the forgotten basis of micronutrient therapy. *Dr. Peter Koeppel. Unpublished Data.*
2. *R Hess et al.* The role of nucleotides in the immune and gastrointestinal systems: potential clinical applications. *doi:10.1177/08845336114349 33. (2012)*
3. *Casagrande et al.* Dietary nucleotides can prevent glucocorticoid-induced telomere attrition in a fast-growing wild vertebrate. *doi: 1111/mec.17114. (2023)*
4. *J Sterczala et al.* Physiological Effects of Nucleotide Supplementation on Resistance Exercise Stress in Men and Women. *doi:10.1519/JSC.0000000000001108. (2016)*
5. *McNaughton et al.* The effects of a nucleotide supplement on the immune and metabolic response to short term, high intensity exercise performance in trained male subjects. *J Sports Med Phys Fitness:47(1):112-8. (2007)*
6. *McNaughton et al.* The effects of a nucleotide supplement on salivary IgA and cortisol after moderate endurance exercise. *J Sports Med Phys Fitness:46(1):84-9. (2006)*
7. *G Lenhart et al.* The efficacy of a compounded micronutrient supplement on the incidence, duration, and severity of the common cold: A pilot randomized, double-blinded, placebo-controlled trial. *doi:10.1371/journal.pone.0237491. (2020)*
8. *Gene-Morales J. et al.,* Dietary Nucleotides Enhance Neurogenesis, Cognitive Capacity, Muscle Function, and Body Composition in Older Adults: A Randomized, Triple-Blind, Controlled Clinical Trial. *Nutrients 17(9), 1431 (2025)*
9. *Miyazaki S. et al.,* Effects of nucleotides on learning and memory in a morris water maze test in normal and basal forebrain-lesioned rats. *Life Sciences 64(1), 45 (1998)*
10. *Qu Z. et al.,* Feeding the microbiota–gut–brain axis: Nucleotides and their role in early life Food Frontiers 4(1) (2023)
11. *Ding T. et al., An Overlooked Prebiotic:* Beneficial Effect of Dietary Nucleotide Supplementation on Gut

Microbiota and Metabolites in Senescence-Accelerated Mouse Prone-8 Mice. *Front Nutr (2022), 9*

12. *Grimble G.K.,* Dietary nucleotides and gut mucosal defence. *Gut (1994), 35*
13. *Burrells et al.,* Dietary nucleotides: a novel supplement in fish feeds 2. Effects on vaccination, salt water transfer, growth rates and physiology of Atlantic salmon. *Elsevier Aquaculture 199 (2001). 171–18*