

## Rice Kefiran Research

Research on **Rice Kefiran (RK)**, a functional postbiotic product developed by Daiwa Pharmaceutical, primarily focuses on the bioactive exopolysaccharide **kefiran** produced by *Lactobacillus kefiranofaciens*. Scientific studies indicate that RK offers significant benefits for metabolic health, anti-aging, and immune modulation.

### Core Health Benefits and Research Findings

#### 1. Metabolic Health and Anti-Obesity

Recent preclinical studies have demonstrated that Rice Kefiran can significantly mitigate diet-induced obesity and related metabolic disorders.

- **Weight and Fat Reduction:** In mouse models fed a high-fat diet, oral administration of RK significantly attenuated body weight gain and reduced adipose (fat) tissue mass (Kurakawa et al., 2024).
- **Cholesterol and Glucose Regulation:** RK has been shown to lower serum total cholesterol and improve glucose tolerance by modulating lipid metabolism and NAD<sup>+</sup> biosynthesis pathways (Kurakawa et al., 2024).
- **Liver Health:** RK administration reduced liver fat accumulation (hepatic steatosis), suggesting potential for managing fatty liver disease (Kurakawa et al., 2024).

#### 2. Anti-Aging and Longevity

Research highlights RK's potential to slow biological aging and improve stress resistance.

- **Epigenetic Aging:** A 2024 human pilot study found that a supplement containing Rice Kefiran (BioBran) improved the **epigenetic aging clock**, potentially rejuvenating biological age in healthy subjects (Kawakami et al., 2024).
- **Lifespan Extension:** In *C. elegans* (nematode) models, RK was found to extend lifespan, increase motility in older age, and enhance resistance to heat stress. These effects were mediated through the DAF-16/FOXO transcription factor (Sugawara et al., 2019).

#### 3. Gut Microbiota and Gastrointestinal Support

As a postbiotic, RK influences health by regulating the intestinal environment.

- **Microbiota Modulation:** RK increases the abundance of beneficial bacteria like *Bacteroides* and *Alistipes* while decreasing bacteria positively correlated with obesity (Kurakawa et al., 2024).
- **Digestive Relief:** Earlier studies by Daiwa's R&D division showed that kefiran improves fecal moisture and relieves constipation (Maeda et al., 2004).

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## Summary of Key Research Papers

Focus Area	Key Findings	Source
<b>Obesity &amp; Metabolism</b>	Reduces weight gain and hepatic steatosis; improves glucose tolerance.	<i>Microorganisms</i> (2024)
<b>Aging (Human)</b>	Improves epigenetic aging markers and immune biomarkers.	<i>Int. J. Mol. Sci.</i> (2024)
<b>Longevity</b>	Extends lifespan and heat stress tolerance in model organisms.	<i>Biosci. Biotechnol. Biochem.</i> (2019)
<b>Blood Pressure/Lipids</b>	Suppresses high blood pressure and reduces serum cholesterol.	<i>BioFactors</i> (2004)

## References

- Kawakami, S., Ninomiya, R., & Maeda, Y. (2024). Improvement in Epigenetic Aging Clock Induced by BioBran Containing Rice Kefiran in Relation to Various Biomarkers: A Pilot Study. *International Journal of Molecular Sciences*, 25(12), 6332. <https://doi.org/10.3390/ijms25126332>
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- Kurakawa, T., Kani, K., Chudan, S., Nishikawa, M., Tabuchi, Y., Sakamoto, K., Nagai, Y., Ikushiro, S., & Furusawa, Y. (2024). Rice Kefiran Ameliorates Obesity and Hepatic Steatosis Through the Change in Gut Microbiota. *Microorganisms*, 12(12), 2495. <https://doi.org/10.3390/microorganisms12122495>
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- Sugawara, T., Furuhashi, T., Shibata, K., Abe, M., Kikuchi, K., Arai, M., & Sakamoto, K. (2019). Fermented product of rice with *Lactobacillus kefiranofaciens* induces anti-aging effects and heat stress tolerance in nematodes via DAF-16. *Bioscience, Biotechnology, and Biochemistry*, 83(8), 1547-1555. <https://doi.org/10.1080/09168451.2019.1606696>

## Dosage Recommendations

Based on recent clinical and preclinical research from 2024 and manufacturer guidelines, here are the dosages used for Rice Kefiran (RK).

### 1. Human Dosage Recommendations

For general health improvement, anti-aging, and metabolic support:

- **Manufacturer's Recommended Dose:** Daiwa Pharmaceutical recommends a daily intake of **400 mg or more** of Rice Kefiran powder.
- **Commercial Supplement Dosing:** Many standardized sachets (such as those distributed in Europe) contain **1.5 g (1500 mg)** of Rice Kefiran per sachet, with a recommended frequency of **1 sachet per day** taken with a meal.
- **Anti-Aging Study (2024):** In the pilot study regarding the "Epigenetic Clock," participants used a formulation containing Rice Kefiran (often combined with BioBran/RBAC) to observe biological age rejuvenation. While specific human clinical trial doses can vary, the 400 mg to 1000 mg range is typical for observed immune and metabolic benefits.

### 2. Research Dosage (Animal Models)

In studies designed to treat specific conditions like obesity or fatty liver, researchers use higher relative doses to observe physiological changes:

- **Anti-Obesity & Metabolism (2024 Study):**
  - **Low Dose:** 10 mg/kg of body weight.
  - **High Dose:** 50 mg/kg of body weight.
  - *Finding:* The 50 mg/kg dose showed more significant results in reducing weight gain, liver fat, and improving glucose tolerance.
- **Immune & Gut Health (Murine Models):**
  - Studies on immune cell balance often use **300 mg/L** administered via drinking water or oral doses ranging from **5 mg to 50 mg/kg** daily to observe changes in IgA+ cells (gut immunity) and anti-inflammatory markers.
- **Safety/Toxicity Data:**
  - Rice Kefiran has a very high safety profile. The **NOAEL** (No Observed Adverse Effect Level) in 90-day rat studies is greater than **1,000 mg/kg/day**, which is significantly higher than any standard human supplement dose.

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## Summary Table

Application	Form	Recommended Dosage
<b>General Health/Maintenance</b>	Powder/Capsule	400 mg – 500 mg per day
<b>Intensive Support (Sachets)</b>	Powder Sachet	1.5 g per day
<b>Pet Health (Dogs/Cats)</b>	Supplement	1 sachet per 5 kg of body weight

### Important Note

Rice Kefiran is standardized to contain at least **5 mg of pure kefirin (the exopolysaccharide) per gram** of product. If you are comparing different brands, ensure you are looking at the total Rice Kefiran content versus the pure kefirin extract.