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### Dietary Effects of Porphyrin from *Porphyra yezoensis* on Growth and Lipid Metabolism of Sprague-Dawley Rats

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Effects of porphyrin (POR), a sulfated galactan from an edible red alga *Porphyra yezoensis* (*Susabinori*), on growth and lipid metabolism were examined using Sprague-Dawley rats fed a cholesterol-free diet. Rats were divided into four dietary groups: those fed diets containing 5% cellulose (control), agar or two types of POR differing in sugar composition and sulfate content (low sulfate content, LS-POR and high sulfate content, HS-POR) for 3 weeks. Ingestion of the diets containing LS- and HS-POR resulted in a significant decrease in food intake and body weight gain relative to the control diet. Renal adipose tissue weight and serum cholesterol level were also significantly lower in the LS-POR group and the HS-POR group than in the other groups. In contrast, agar, which consists of the same sugar components as POR, had no effect on the above-mentioned growth and lipid parameters. Fecal excretion of neutral sterols was markedly enhanced by POR ingestion, suggesting that POR has a potent effect to interfere with the absorption of neutral sterols within the gastrointestinal tract. Fecal excretion of fatty acids and neutral sterols was significantly higher in the LS-POR group than in the HS-POR group, and it was suggested that the ability to interfere with the absorption of cholesterol and fatty acid within

the gastrointestinal tract depends on the sulfation rate of porphyan.

**Keywords:** [porphyran](#), [Porphyra yezoensis](#), [agar](#), [sulfate group](#), [non-starch polysaccharide](#), [hypolipidemic effect](#), [cholesterol](#)

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