

## The Promised Neverland – Is Diet Linked to Degeneration?

Adam Morgan FRAS

*Natural Sciences (Life and Physical Sciences), School of Biological Sciences, University of Leicester*

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### Abstract

In the manga, anime, and film *The Promised Neverland*, human children are raised on small, high-quality farms, only to be slaughtered by age 12 and consumed by demons. The demons require human flesh to maintain their humanoid form and intelligence; without it, they degenerate into primitive, less intelligent forms. This paper examines how dietary deficiencies contribute to biological degeneration in living organisms, particularly humans, drawing parallels to the demons' dependence on human consumption.

**Keywords:** *Health; Biology; Manga; Diet; Degeneration; The Promised Neverland*

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### Introduction

In *The Promised Neverland*, the world is divided into two realms, human and demon. In the demon realm, children are raised in seemingly loving orphanages (Fig. 1), believing they will be adopted when they leave.



Figure 1 – Children at Grace Field House [1].

The reality is far more sinister; these orphanages are farms where children are raised for superior intelligence and physical traits [1]. At ages six to twelve, determined by their test scores, they are slaughtered and processed into premium meat to sustain the ruling demon class [2].



Figure 2 – The Degenerated Demons [3].

The brain is especially valued for preserving intelligence and a humanoid form, without which demons degenerate into mindless beasts (Fig. 2). A rare genetic mutation enables a small subset of demons, those with what the elite call "evil blood", to retain their humanoid form without consuming humans. Notable examples include Mujika, Sonju, and Vylk (Fig. 3). The ruling elite deem these anomalies a threat and actively hunt them.



Figure 3 – Notable demons, Mujika (left) [4], Sonju (center) [5], and Vylk (right) [6].

### Degeneration

Biological degeneration refers to the progressive deterioration of cells, tissues, and organs, resulting in functional decline and compromised health [7, 8, 9]. It encompasses various forms, including but not limited to:

- Muscular degeneration
- Ocular degeneration
- Neurological degeneration

Demon degeneration is exclusively diet dependent; therefore, this paper will explore diet-induced degeneration in humans, drawing parallels to the demons' reliance on human consumption.

### Ocular Degeneration

Nutrient deficiencies contribute to ocular degeneration. Inadequate intake of vitamins A, B (B6, B12, folate), C, E, carotenoids, zinc, and omega-3 fatty acids impairs eye health. Zinc facilitates vitamin A transport to the retina [10], Zinc deficiency can result in xerophthalmia, leading to blindness if untreated [11, 12, 13]. B vitamins regulate homocysteine metabolism, essential for protein synthesis and methylation [14]. Deficiencies elevate homocysteine levels (hyperhomocysteinaemia), increasing the risk of retinal arteriosclerosis, glaucoma, and macular or optic atrophy [14].

### Neurological Degeneration

Neurological degeneration can arise from deficiencies in omega-3 fatty acids (particularly DHA), vitamins C and E, and B vitamins (B6, B12, and folate) [15]. Omega-3s are crucial for brain function, with deficiencies associated with depression, dementia, and dyslexia. Studies in rodents show that omega-3 deficiency impairs learning and memory [16], highlighting their role in neuroplasticity, neurotransmission, and cognition.

DHA, a crucial brain phospholipid, maintains membrane fluidity and synaptic function. As endogenous synthesis is inefficient, dietary intake is essential to prevent cognitive decline [15]. In healthy brains, DHA constitutes 10 % ( $C_0$ ) of phospholipids, with reductions of 20–30 % linked to cognitive impairment [16]. Assuming a 5 % annual decline ( $k$ ) based on rodent models [16], DHA levels after five years  $C(t)$  can be estimated using:

$$C(t) = C_0 e^{-kt} \quad [\text{Eq}^n 1]$$

$$\% \text{ Decline} = \frac{C_0 - C(t)}{C_0} \times 100 \quad [\text{Eq}^n 2]$$

Eq. 1 models the exponential decay from first order kinetics, while Eq. 2 calculates the DHA percentage decline. Applying these,  $C(t)$  is 7.79 %, indicating a 22.1 % decline, within the range associated with cognitive impairment.

B vitamins support brain health by regulating metabolism, methylation, DNA repair, gene expression, and neurotransmitter synthesis. Deficiencies are linked to depression and cognitive decline [13, 15]. Due to its high metabolism and lipid content, the brain is vulnerable to oxidative stress. Vitamins C and E act as antioxidants, preventing oxidative damage that leads to cellular dysfunction and neurological decline [15]. Given these roles, the cognitive degeneration of demons is unsurprising when their diet lacks essential nutrients (Fig. 2).

### Demon vs Human Degeneration

When deprived of essential nutrients, both humans and demons experience cognitive and physiological decline. While humans suffer deteriorating health and cognitive impairment without significant morphological changes, demons transform into primitive, less intelligent forms. The brain [13, 15, 17] and retina [13, 18], the body's most nutrient-dense regions, are highly prized by demons for their role in maintaining intelligence and form. In The Promised Neverland, nutrient deprivation causes demons to lose their humanoid form entirely (Fig. 2), a phenomenon that, albeit more extreme, parallels the degenerative effects of nutrient deficiencies in humans.

### Conclusion

In The Promised Neverland, demons degenerate into primitive forms without human meat, except those with “evil blood.” While fictional, this reflects real-world diet-related degeneration caused by nutrient deficiencies. Humans do not require meat for survival, but adequate nutrition is essential for maintaining health. Deficiencies can lead to conditions such as retinal degeneration and neurological decline. Further research is needed for a comprehensive analysis, but understanding the role of nutrition in degeneration may aid in early intervention and disease prevention.

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