

Research Article

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## Effects of *Saccharomyces cerevisiae* Supplementation on Growth Performance and Nutrient Utilization of African Catfish *Clarias gariepinus* (Burchell, 1822)

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International Journal of Aquaculture, 2026, Vol.16, No.3 doi: [10.5376/ija.2026.16.0016](https://doi.org/10.5376/ija.2026.16.0016)

Received: 15 May, 2026

Accepted: 16 Jun., 2026

Published: 30 Jun., 2026

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### Preferred citation for this article:

Abdullahi A.I., Sanda M.A., Mohammed T., Mohammed A.M., Ibrahim Y., Maiwada S., and Lawan G.B., 2026, Effects of *Saccharomyces cerevisiae* supplementation on growth performance and nutrient utilization of African catfish *Clarias gariepinus* (Burchell, 1822), International Journal of Aquaculture, 16(3): 196-202 (doi: [10.5376/ija.2026.16.0016](https://doi.org/10.5376/ija.2026.16.0016))

**Abstract** This study evaluated the effects of *Saccharomyces cerevisiae* on the growth performance and nutrient utilization of *Clarias gariepinus* fingerlings. Five isoproteinous diets were formulated with *Saccharomyces cerevisiae* at inclusion levels of 0.0%, 0.5%, 1.0%, 1.5%, and 2.0%, representing one control and four treatment diets. Completely randomized design was employed. One hundred and fifty (150) *Clarias gariepinus* fingerlings were used for the experiment. Ten fish were randomly assigned to 1 m<sup>2</sup> Hapa net. A total of 15 Hapa nets were used in polythene-lined pond of 10 m × 7 m (l×b) and depth of 1.5 m, the five formulated diets were fed to the experimental fish at 5% body weight for a period of 8 weeks. Highest mean weight gain of 68.65±8.49 g was obtained in fish fed 0.5% followed by 54.37±8.49 g obtained in the fish fed 1.5%. The least mean weight gain of 37.66±8.49 g was recorded in fish fed 2.0%. The highest FCR value of 1.51 was recorded in fish fed the 1.5% diet, while the lowest and best FCR value of 0.52 was recorded in fish fed the 0.5% *S. cerevisiae* diet, no significant difference ( $P > 0.05$ ) was observed in the feed conversion ratio of the fish fed 0% and 1% inclusion level of *S. cerevisiae*. This study revealed that the fish fed 0.5% *Saccharomyces cerevisiae* had the best growth performance and nutrient utilization, unveiling the positive effect of *Saccharomyces cerevisiae* on the culture of *Clarias gariepinus*. Therefore, dietary supplementation with 0.5% *S. cerevisiae* may be considered a natural feed additive for improving growth performance and nutrient utilization in *C. gariepinus*. This study is expected to provide baseline information for the practical use of yeast-based probiotics in African catfish culture.

**Keywords** *Saccharomyces cerevisiae*; African catfish; Yeast; Natural growth promoter; *Clarias gariepinus*

## 1 Introduction

African catfish, *Clarias gariepinus* is of great economic importance to aquaculture in Nigeria because of its high market price, fast growth rate, ability to withstand adverse conditions especially low dissolved oxygen content, ability to practice aquatic and aerial respiration and resistance to parasites and diseases. African catfish production accounts for 85% total aquaculture production in Nigeria (Bolorunduro, 2016).

Dietary requirements are among the most important factors influencing the success of fish farming. Over the past three decades, fish nutrition research has expanded to include functional ingredients, feed additives, and probiotics that may improve growth, feed utilization, and fish health. In recent years, the role of probiotics in nutrition and health of certain aquaculture species have been investigated (Ringo et al., 2010). To improve aquaculture, the use of several types of feed additives known as growth promoters are increasingly used by fish farmers to improve growth performance and feed efficiency. These growth promoters enhance fish growth by increasing digestibility, immune stimulation, nutrient assimilation, and supplying essential micro-nutrients in the diet or combining these functions (Anwar, 2018).