

Saccharomyces cerevisiae (Louis Pasteur (1857 or 1858 contextually, but name is Louis)) is a naturally occurring yeast (probiotics), is used in aquaculture as a dietary supplement. It contains functional components such as β -glucans and oligosaccharides, which may enhance immune responses and support fish growth. This fermented product includes various beneficial components but rarely contains living cells (El-Nobi, 2021). Probiotics are sometimes expected to have direct growth promoting effects on fish, either by directly involving nutrient uptake or by providing nutrients or vitamins. Using yeast as a probiotic was studied by Andlid et al. (1995), The supplementation of yeast (*Saccharomyces cerevisiae*) has significantly improved aquatic animals' health, physiological status, and productivity (Gonçalves and Gallardo-Escárate, 2017; Zaineldin et al., 2021). Yeast cell walls are known for their protective role against mycotoxin contamination by reducing aflatoxin B1 absorption in the GIT of fish (Pinheiro et al., 2020). Chemical product such as mycotoxins and Nitrates used as an additive cause undesirable effects on fish which also affect the consumer. Despite growing interest in the use of *S. cerevisiae* as a probiotic in aquaculture, limited information is available on its dietary effects in African catfish. Therefore, this study evaluated the effects of graded dietary supplementation with *S. cerevisiae* on growth performance nutrient utilization of *Clarias gariepinus* fingerlings.

2 Results

2.1 Proximate composition of the experimental diets

Table 1 shows the Proximate Composition of the four diets formulated and prepared for the feeding trial. The protein content of the diet ranged between 39.20 and Moisture content 9.79 to 12.00, ether extra on fat 10.00 to 19.50, crude fibre 1.00 to 7.50, Ash 1.00 to 1.50, Nitrogen free extract 23.66 to 32.79.

Table 1 Proximate composition of the experimental diets

Parameters (%)	Inclusion level of <i>Saccharomyces cerevisiae</i>				
	0%	0.5%	1.0%	1.5%	2.0%
MC	11.92	9.79	10.21	10.77	12.00
CP	39.20	43.66	40.00	44.07	41.10
EEF	10.00	19.00	14.00	19.50	16.50
CF	7.50	1.00	1.50	1.00	1.00
ASH	1.50	1.00	1.50	1.00	1.00
NFE	29.88	25.55	32.79	23.66	28.4

Means with the same superscript (s) across the same row are not significantly different ($p > 0.05$)

Table notes: MC = moisture content, CP = crude protein, EEF= ether extract on fat, CF= crude fibre, NFE= Nitrogen Free Extract

2.2 Growth performance and nutrient utilization of *Clarias gariepinus* feed diet containing *Saccharomyces cerevisiae*

The growth performance and nutrient utilization of *Clarias gariepinus* fed diets containing *Saccharomyces cerevisiae* are indicated in Table 2. The results show that the highest initial weight recorded was 3.13 g in the 1.5% inclusion level of *Saccharomyces cerevisiae*, followed by 3.06 g and 2.96 g in the 2.0% and 0% inclusion levels of *Saccharomyces cerevisiae*, respectively. The lowest weights were recorded in the 0.5% and 1.0% inclusion levels, with values of 2.93 g. No significant difference ($P > 0.05$) was observed among the treatments. The highest initial length recorded was 7.70 cm in the 2.0% inclusion level of *Saccharomyces cerevisiae*, followed by 7.60 cm and 7.40 cm in the 1.0 % and 0.5% inclusion levels of *Saccharomyces cerevisiae*, respectively. The lowest lengths were recorded in the 1.5% and 0% inclusion levels, with values of 7.33 cm and 7.11 cm, respectively. No significant difference ($P > 0.05$) was observed among the 0.5%, 1.0%, and 1.5% inclusion levels of *Saccharomyces cerevisiae*, whereas a significant difference was observed between the 0% and 2.0% inclusion levels of *Saccharomyces cerevisiae*. The highest final weight recorded was 71.59% in the 0.5% inclusion level of *Saccharomyces cerevisiae*, followed by 57.51% and 50.23 g in the 1.5% and 1.0% inclusion levels of *Saccharomyces cerevisiae*, respectively. The lowest weights were recorded in the 0% and 2.0% inclusion levels, with values of 48.34% and 40.73 g, respectively. No significant difference ($P > 0.05$) was observed among the 0%, 1.0%, and 1.5% inclusion levels of *Saccharomyces cerevisiae*. However, a significant difference was observed in the 0.5% inclusion level of *Saccharomyces cerevisiae*, which differed significantly from the other treatments.