

Evaluation of Molasses and Sucrose as Carbohydrate Sources for Biofloc System on Nile Tilapia (*Oreochromis niloticus*) Performances

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Abstract : Performances of mixed-sex Nile tilapia (*Oreochromis niloticus*) fingerlings (11.33 ± 1.78 g /fish) reared under biofloc system developed by molasses and sucrose as carbon sources in indoor fiberglass tanks were evaluated. Six indoor fiberglass tanks (1m³ each filled with 1000 l of underground fresh water), each was stocked with 2kg fish were used for 14 weeks experimental period. Three experimental groups were designed (each group 2 tanks) as following: 1-control: 20% daily without biofloc, 2-zero water exchange rate with biofloc (molasses as C source) and 3-zero water exchange rate with biofloc (sucrose as C source). Fish in all aquariums were fed on floating feed pellets (30% crude protein, 3 mm in diameter) at a rate of 3% of the actual live fish body, 3 times daily and 6 days a week. Carbohydrate supplementations were applied daily to each tank two hrs, after feeding to maintain the carbon: nitrogen ratio (C: N) ratio 20:1. Fish were reared under continuous aeration by pumping air into the water in the tank bottom using two sandy diffusers and constant temperature between 27.0-28.0 °C by using electrical heaters for 10 weeks. Criteria's for assessment of water quality parameters, biofloc production and fish growth performances were collected and evaluated. The results showed that total ammonia nitrogen in control group was higher than biofloc groups. The biofloc volumes were 19.13 mg/l and 13.96 mg/l for sucrose and molasses, respectively. Biofloc protein (%), ether extract (%) and gross energy (kcal/100g DM), they were higher in biofloc molasses group than biofloc sucrose group. Tilapia growth performances were significantly higher ($P < 0.05$) with molasses group than in sucrose and control groups, respectively. The highest feed and nutrient utilization values for protein efficiency ratio (PER), protein productive (PPV%) and energy utilization (EU, %) were higher in molasses group followed by sucrose group and control group respectively.

Keywords : biofloc, Nile tilapia, carbohydrates, performances

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