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EFFECTS OF SYNBIOTIC SUPPLEMENTATION ON GROWTH PERFORMANCE, HEMATOLOGICAL PARAMETERS AND GUT HEALTH IN NILE TILAPIA (OREOCHROMIS NILOTICUS)

Rahmi 1, *, Nur Insana Salam 1 , Andi Ninnong Renita Relatami 2 , Amelia Ramadhani Anshar 2 , Akmal 3 , Mohammad Syaichudin 3 , Hidayat Suriyanto Suwoyo 3 , Yuani Mundayana 3 , Khairun Nisaa 3 , Fitri Indah Yani 4 and Emienour Muzalina 5

1Aquaculture Study Program, Faculty of Agriculture, University of Muhammadiyah Makassar, Jl. Sultan Alauddin No. 259, Makassar, 90234, South Sulawesi, Indonesia 2Veterinary Medicine Study Program, Faculty of Medicine, Hasanuddin University, Jl Perintis Kemerdekaan Km 10 Makassar, 90245, South Sulawesi, Indonesia 3National Research and Innovation Agency, Jl. Raya Jakarta-Bogor No. 32, Pakansari, Bogor Regency, 16915, East Java, Indonesia 4Aquaculture Study Program, Faculty of Agriculture, University of Muhammadiyah Pare-pare, Jl. Jend. Ahmad Yani No.Km. 6, Bukit Harapan, Soreang, Parepare city, 91112, South Sulawesi 5Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia *Corresponding author: rahmiperikanan@unismuh.ac.id

ABSTRACT This study aimed to examine the impact of synbiotic supplementation, precisely the combination of the probiotic Bacillus subtilis with banana flour as a prebiotic, on Nile tilapia's growth performance, immune response, and gut health. The juvenile tilapia obtained from a regional aquaculture facility were randomly assigned to experimental groups that received different concentrations of the probiotic B. subtilis in conjunction with prebiotics derived from banana flour. Throughout the 63-day study period, growth metrics, including weight gain (WG), feed conversion ratio (FCR), specific growth rate (SGR), and protein efficiency ratio (PER), were evaluated regularly. The findings indicated that synbiotic supplementation markedly enhanced growth performance compared to the control group. The results of the hematological evaluations demonstrated elevated red blood cell (RBC) counts, hemoglobin concentrations and white blood cell (WBC) counts, which suggests an enhanced immune response. The histopathological examination of the intestinal tissues indicated that the synbiotic-fed fish displayed increased villus height, crypt depth, and goblet cell density, which suggests that their gut health and nutrient assimilation were improved. In summary, incorporating synbiotics in tilapia diets has resulted in enhanced growth performance, immune functionality, and gastrointestinal health, which presents a promising strategy for advancing sustainable aquaculture practices. Key words: Bacillus subtilis., Growth, Synbiotic, Tilapia.