

Effect of potassium diformate (KDF) on growth performance of male Nile Tilapia (*Oreochromis niloticus*)

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Introduction: Growing awareness from consumers and producers of aquaculture species has resulted in a demand for responsible and sustainable aquaculture. The regulatory authorities in most exporting countries now focus on the misuse of antibiotic growth promoters (AGP) in aquaculture, while public attention has shifted towards sustainable production methods. As a result these methods had to be tested. Several feed additives, including acidifiers consisting of organic acids and their salts may promise to obtain high performance in aquaculture.

Material and methods: The current investigation aimed to examine effects of potassium diformate (0.3% KDF) in commercial tilapia feeds. Twenty-five male Nile tilapias with a mean weight of 7.84 ± 0.90 g were stocked in eight 240 l polyethylene tanks in a static-renewal system in the Philippines (Binangonan Freshwater Station of SEAFDEC-AQD). Fish were reared for 74 days. Proximate composition of the commercial feed was 31.4% crude protein, 6.9% crude fat, 8.6% crude fibre, 52.3% NFE and 0.8% ash as well as a gross energy of 17.3 kJ g⁻¹. The fish in both the control and KDF treatment were given the appropriate feed with a daily ration equivalent to 5% of their body weight. Feed was dispensed thrice a day at 0800h, 1200h and 1600h. Water parameter as well as growth performance of fish were monitored regularly.



Fig. 1: Tilapia hafter arvest

Results and conclusions: Diet supplemented with KDF yielded improved growth data, based on daily growth rate as well as specific growth rate ($P < 0.01$). Tilapia in the control group reached an average body weight of 45.5 ± 1.1 g, while the fish fed with potassium diformate reached a mean weight of 51.4 ± 2.2 g. Likewise, feed conversion ratio was improved significantly ($P < 0.05$).

Table 1: Growth performance of tilapia fed with or without KDF during 74 days of culture

	Final body weight [g]	Specific growth rate [%]*	FCR
Control	45.5±1.1	2.38±0.03	1.97±0.71
0.3% KDF	51.4±2.2	2.54±0.06	1.78±0.11
P-level	0.003	0.004	0.035

*Specific growth rate [%], SGR = (ln final body mass [g] – ln initial body mass [g]) / days of culture x 100

The results show that addition of 0.3% KDF in the diets of Nile tilapia can help to improve its growth performance and thus, can achieve a more economic and sustainable tilapia production. Furthermore, the additive optimizes feed efficiency, which is in full agreement with previously reported improved digestibility parameters after the inclusion of KDF in fish feeds.