

# EFFECTS OF DIFFERENT DOSAGES OF POTASSIUM DIFORMATE IN FISHMEAL ON THE PERFORMANCE OF ATLANTIC SALMON *Salmo salar*

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Acid preservation of fish and fishmeal with potassium diformate (KDF) is practised in Norway and is gaining popularity elsewhere. Several studies have reported beneficial effects on fishmeal, such as reduced levels of total volatile nitrogen. Previous studies using potassium diformate in piglets and in tropical fish species have also shown improved growth and digestibility. However, data from temperate aquaculture are still missing. The objective of the present study was therefore to investigate the effect of potassium diformate (FishForm<sup>®</sup> Plus), added during fishmeal production, on growth and feed conversion ratio in Atlantic salmon (*Salmo salar* L.).

The trial was carried out at AKVAFORSK research station in Sunndalsøra, Norway. Atlantic salmon with a mean weight of 270 g were randomly distributed between 9 fibre glass tanks (1m<sup>3</sup>), with 50 fish in each tank. The tanks were supplied with 20 litres per minute of sea water (30-32‰) for a total experimental period of 126 days. The average temperature during the trial was 10°C. A 24 h light regime was used throughout the experimental period and the fish were fed continuously with automatic feeders with a commercial fish feed (crude protein content 40%; crude fat content 30%) containing 0%, 0.8% or 1.4% KDF. The total biomass and the number of fish in each tank were determined at 0, 42, 84 and 126 days. Data (mean ± standard deviation) were subjected to statistical analysis and a significance level of 0.05 was used in all tests.

Table 1: Performance of Atlantic salmon fed 3 different test diets for 126 days (Mean ± SD).

Treatment	Initial weight (g)	Final weight (g)	Body weight gain (g)	Specific growth rate SGR	FCR <sup>1)</sup>
0.0% KDF	276.0 ± 5.5	575.0 ± 37.0	299.0 ± 61.3	0.58 ± 0.08	0.83 ± 0.05 <sup>a</sup>
0.8% KDF	275.1 ± 4.8	626.7 ± 14.8	351.6 ± 22.3	0.65 ± 0.02	0.77 ± 0.00 <sup>b</sup>
1.4% KDF	258.6 ± 12.4	615.0 ± 12.9	356.4 ± 33.1	0.69 ± 0.06	0.75 ± 0.01 <sup>b</sup>

<sup>1)</sup> Means with different superscripts in each row differ significantly (P≤0.05)

Fish fed pelleted diets containing potassium diformate enriched fishmeal had a numerically increased body weight gain (17% and 19% for 0.8% and 1.4% KDF inclusion rate respectively). The SGR of fish fed 1.4% KDF tended to be higher (P=0.055) compared to the negative control. Furthermore, both groups treated with KDF had a significantly better feed conversion ratio. It was seen as well, that the uniformity of fish fed KDF treated fishmeal was improved. Based on these results, it can be concluded that fishmeal preserved with potassium diformate can have a beneficial impact on the performance of farmed Atlantic salmon. Further studies are needed to validate the results achieved under Norwegian conditions.