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<td>Effect of dietary supplementation of sodium butyrate and / or protexin on the growth performance, some blood parameters, and immune response of oreochromis niloticus</td>
<td>Ahmed H.A. and Sadek K. M</td>
<td>Two hundred Oreochromis niloticus fingerlings were used to explain the effects of supplementing a basal diet with sodium butyrate (SB) and / or protexin on the growth performance, some blood parameters, body composition, and immune response. Oreochromis niloticus fingerlings were allotted into 4 experimental groups. The control group (1) was fed the basal diet (BD), while group (2) was fed BD with SB at level 3 g/10 kg diet, group 3 fed BD plus protexin (probiotic) 1 g/10 kg diet and group 4 was fed BD with SB and protexin at 3 and 1 g / 10 kg diet. Results obtained showed that the highest growth (final weight, total weight gain and SGR) of Nile tilapia were obtained with feeding diet containing SB plus probiotics followed by SB (group 2) supplemented diets (P&lt;0.05)</td>
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when compared with those of control group. The best FCR values observed in SB plus Protexin-supplemented diets. The results revealed that, probiotic nonsignificantly increased blood glucose and intestinal glucose absorption while sodium butyrate significantly increased blood glucose level, intestinal glucose absorption and both probiotic and SB supplementation have no any adverse effects on liver functions reflected in normal blood protein pattern and enzymatic activity. We concluded from this study that using of SB and SB plus probiotic is preferred for good performance in tilapia fish production because the beneficial effect of butyric acid on the proliferation of the intestinal epithelium.

**Keywords:** Oreochromis niloticus, butyric acid, probiotics, growth, glucose absorption


**References**
Maurizio M; Maud G; Sara F; Laura M; Jaroslaw W; Giovanna L; Jean L; Paul G. Paolo B. 2008. Supplemental Sodium Butyrate Stimulates Different Gastric Cells in Weaned Pigs J. Nutr. 138: 1426–1431.;

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**Abstract**
Three hundred and sixty un-sexed one day old of Japanese quail chicks were used in this study to investigate the effect of dietary supplementation of Entrococcus faecum and Lactobacillus containing probiotics (Protexin® and AM Phi- Bact) respectively, at 0.1 g/kg and 0.325 g/kg and/or MOS or β-glucan plus MOS containing prebiotic (AGFLO® and Alphamune) respectively at 0.5g/kg for each one compared with control diet for 9 respective groups (45 birds/group) on growth performance, immune response, some blood parameters and carcass traits of
Japanese quail chicks. At the end of experiment it was observed that Entroccoccus faceum or Lactobacillus containing probiotics and/or MOS or β-glucan plus MOS containing prebiotics (groups 2 – 9) supplementation non significantly (P≥0.05) improved final body weight and total body gain of quail chick by about (0.3% and 0.5%), (1.5% and 1.8%), (1.2% and 1.4%), (2.5% and 2.7%), (3.9% and 4.3%), (2.1% and 2.3%), (0.9% and 1.1%) and (1.4% and 1.5%) respectively when compared with the control. Concerning total feed intake it was observed that probiotic (containing Entrococcus or lactobacillus) and prebiotic (AGFLO only) suplementations (groups 2 – 4) slightly increased total feed intake by about 1.7%, 0.75 and 1% respectively, while supplementation of Alphamune prebiotic and combination between probiotic and prebiotics (groups 5 – 9) reduced total feed intake during the whole experimental period by about 1.7%, 4%, 6.8%, 5.7% and 6.4% respectively when compared with the control. Lower feed intake and improved gain reflected on significantly (P≤0.05) improved average FCR throughout the experimental period when compared with the control. It was observed that bacterial probiotics reduced phagocytic activity and improved phagocytic index while MOS or β-glucan plus MOS prebiotics improved both phagocytic activity and index in quail chicks when compared with the control. Moreover Supplementation of MOS alone or combined with bacterial probiotics more effective for production of antibody titer against New castle disease than bacterial probiotics supplementation alone especially toward the end of the experimental period. It was observed that combination between probiotics and prebiotics (groups 6 -9) significant improved in total protein, albumine and globulin and decreased GPT and triglycerides serum concentrations when compared with the control. Moreover, treatment had no significant effect on dressing%, liver, heart and gizzard relative weight when compared with the control. While bacterial probiotics had adverse effect on relative weight of some immune organs.

**Keywords:** Japanese quail, probiotic, prebiotic, performance, immune response, blood parameters.

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  ** Fac. of Vet. Medicine, Damanhour University, Egypt
Experiment was conducted using 500 ducks of day-old (300 Muscovy and 200 Moulard). Sexing was done for ducks at the first day of age, then the experiment was completed on males only (180 Muscovy, 120 Moulard), where it was brought up in accordance with the principles of the French care for birds research and rearing of water fowls for fattening purposes until 12 weeks of age. At this age birds were divided within each breed according to feeding regime (forced feeding and *ad libitum* feeding group), and addition of L carnitine by 1000 mg \ kg of feed (L carnitine and non L carnitine group) making eight groups until the end of the study (at 14 weeks).

The results of the experiment revealed that, forced feeding has a significant increase in body weight and absolute or relative weight gain (5954.33 g, 1421.03 g and 23.51%, respectively) than *ad libitum* feeding (4506.75 g, 411.05 g and 8.94%; respectively). Under the regime of force-feeding Moulard ducks had significantly increase in absolute and relative body weight gain (1808.16 g and 29.64%, respectively) than Muscovy ducks (930.67 g and 15.73% respectively). Feed conversion per kg increase in weight was the best in Moulard ducks than Muscovy under force-feeding regime (6.29 kg and 11.5 kg, respectively), and vice versa with the *ad libitum* feeding (18.89 for 11.06 kg, respectively), at the same time the Moulard ducks needed a larger amount of feed per kg liver, (in forced or *ad libitum* feeding) than Muscovy.

Force-feeding led to severe assembly of fat in the liver, which was significantly higher than in *ad libitum* feeding groups (57.78% from 35.28%, respectively) and on the contrary, was the percentage of protein (9.66% from 28.81%, respectively). Addition of L carnitine to the feed at forced feeding period resulted in a significant increase in the liver weight (5731.97 g) than in non L carnitine fed group(5400.13 g), on the other hand other performance traits not affected significantly by the addition of L carnitine in feed. Liver weight (absolute and Percent) in L carnitine treatment group was higher than non L carnitine group in the *ad libitum* feeding group but it was not significant. Using L carnitine in *ad libitum* feeding groups achieved a higher percentage of dry matter in liver (30.88%) than those without L carnitine (28.98%), unlike the chest muscles; dry matter was higher in the group without L carnitine than with L carnitine (32.05% from 30.37%). The composition of the liver and the muscles under the system of forced feeding with L carnitine than those feed without L carnitine. We concluded from this study that using of Moulard duck is preferred for the foie gras production than Muscovy ducks because of its ability to receive large quantity of feed and has the highest feed conversion and a better feed per kg increase in weight as well as the absolute and relative weight of the liver from Muscovy ducks under the forced feeding regime. L carnitine has no effect on the foie gras production, but if it was added to the feed during the forced feeding period it improved live weight significantly.

**Keywords:** L carnitine, Muscovy ducks, Force-feeding, growth, liver

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