

EFFECT OF SOME MAJOR ELEMENTS ON GROWTH PERFORMANCE AND BLOOD PARAMETERS IN FISH

By

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ABSTRACT

Dena Abbas Ahmed: Effect of Some Major Elements on Growth Performance and Blood Parameters in Fish. Unpublished PhD. Sc. Thesis, Department of Animal Production, Faculty of Agriculture, Ain Shams University, 2018.

The experiment was carried out at Regional Centre for Food and Feed, Minister of Agriculture, Egypt for a period of 3 months using Nile tilapia (*Oreochromis niloticus*, 25 g average weight).

The objective of the present study is to determine the optimal source and amount of phosphorus supplementation in commercial feeds with the highest growth rate and the lowest releasing in environmental and protect water quality.

Fish were divided into twelve groups (treatments) each group was stocked into two aquaria each contains 10 fish.

Fish were fed diet contained different concentrations (0.5, 0.7, 0.9 and 1.1% phosphorus) from three different sources of phosphorus (mono calcium phosphate, mono potassium phosphate and mono sodium phosphate).

Nile Tilapia (*Oreochromis niloticus*) initial weight (25g) in the all treatment were fed diet contained 30% protein and Energy Fish in these treatments were fed on the diet containing 0.5, 0.7, 0.9, and 1.1% of mono calcium phosphate, mono potassium phosphate and mono sodium phosphate as sources of phosphorus to the end of the experimental. The fish diet was offered at a rate of 3 % of tilapia biomass at weight.

Results showed that average daily gain, specific growth rate, protein efficiency ratio, feed conversion ratio were significantly improved by dietary phosphorus 0.9 % ($P < 0.05$) concentration and mono calcium phosphate was the source of phosphorus

Body composition analysis showed that the whole body protein and ash content were increased linearly but lipid was decreased ($P < 0.05$) with increasing dietary of phosphorus.

Based on observed growth performance and blood parameters it could be stated that dietary phosphorus requirement for Nile Tilapia (*Oreochromis niloticus*) Juvenile was 1.1% mono sodium phosphate.

Keywords: Phosphorus requirement, Growth, Blood Parameters, Nile Tilapia (*Oreochromis niloticus*).

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Dedication to my parents, my husband, my daughters, my brothers, my sister, for their kind support and kind advice.

CONTENTS

	Page
LIST OF TABLE	III
LIST OF FIGURES	IV
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	4
2.1. Aquaculture world production.	4
2.2. Major element phosphorus and its characteristics	4
2.3. The function of phosphorus in fish	6
2.4. Estimation of dietary requirement of phosphorus	7
2.5. The relation between phosphorus and calcium requirements	15
2.6. Fish blood parameter	16
3. MATERIALS AND METHODS	17
1. Average daily gain (ADG)	21
2. Specific growth rate (SGR)	21
3. Food conversion ratio (FCR)	21
3. Protein efficiency ratio (PER)	22
4. Chemical analysis of fish	22
6. Blood parameters	23
7. Statistical analysis	23
4. RESULT AND DISCUSSION	24
4.1. Effect of treatments on growth performance	24
4.1.1. Effect of different sources and different levels of phosphorus on weight gain and average daily gain of Nile Tilapia <i>Oreochromis niloticus</i> .	24
4.1.2. Effect of different sources and different levels of phosphorus on specific growth rate (SGR) of Nile Tilapia <i>Oreochromis niloticus</i>	28
4.1.3. Effect of different sources and different levels of phosphorus on protein efficiency ratio (PER) of Nile Tilapia <i>Oreochromis niloticus</i>	31

	Page
4.1.4. Effect of different sources and different levels of phosphorus on feed conversion ratio of Nile Tilapia <i>Oreochromis niloticus</i>	33
4.2. Effect of different sources and different levels of phosphorus on percentage of releasing phosphorus in water of aquariums of Nile Tilapia <i>Oreochromis niloticus</i>	35
4.3. Effect of different sources and different levels of phosphorus on carcass chemical composition of Nile Tilapia <i>Oreochromis niloticus</i>	37
4.4. Effect of treatments on some blood parameters	44
4.4.1. Effect of different sources and different levels of phosphorus on blood phosphorus level of Nile Tilapia <i>Oreochromis niloticus</i>	44
4.4.2. Effect of different sources and different levels of phosphorus on blood Packed cell volume (PCV) of Nile Tilapia <i>Oreochromis niloticus</i>	46
4.4.3: Effect of different sources and different levels of phosphorus on hemoglobin (Hb) of Nile Tilapia <i>Oreochromis niloticus</i>	48
4.4.4. Effect of different sources and different levels of phosphorus on red blood cell (RBC) of Nile Tilapia <i>Oreochromis niloticus</i>	50
4.4.5. Effect of different sources and different levels of phosphorus on white blood cell (WBC) of Nile Tilapia <i>Oreochromis niloticus</i>	52
SUMMARY	55
REFERENCE	59
ARABIC SUMMARY	

LIST OF TABLES

Table No.		Page
1	Ranges of water temperature °C, pH, and dissolved oxygen, during the feeding experiment	18
2	Formulation of the experimental diets (gm\Kg diet)	19
3	Chemical analysis of the experiment diets (on fresh weight).	20
4	Effect of different sources and different levels of phosphorus on body weight gain (g) of Nile Tilapia <i>Oreochromis niloticus</i> .	25
5	Effect of different sources and different levels of phosphorus on average daily gain (g/day) of Nile Tilapia <i>Oreochromis niloticus</i>	26
6	Effect of different sources and different levels of phosphorus on specific growth rate of (%/day) of Nile Tilapia <i>Oreochromis niloticus</i>	29
7	Effect of different sources and different levels of phosphorus on protein efficiency ratio of Nile Tilapia <i>Oreochromis niloticus</i> .	32
8	Effect of different sources and different levels of phosphorus on feed conversion ratio of Nile Tilapia <i>Oreochromis niloticus</i> .	34
9	Effect of different sources and different levels of phosphorus on percentage of releasing phosphorus in water of aquarium of Nile Tilapia <i>Oreochromis niloticus</i> .	37
10	Effect of different sources and different levels of phosphorus on whole body protein content of Nile Tilapia <i>Oreochromis niloticus</i> .	38

Table No.		Page
11	Effect of different sources and different levels of phosphorus on lipid content of Nile Tilapia <i>Oreochromis niloticus</i> .	40
12	Effect of different sources and different levels of phosphorus on body ash content (%) of Nile Tilapia <i>Oreochromis niloticus</i> .	42
13	Effect of different sources and different levels of phosphorus on blood phosphorus level (mg/dl) of Nile Tilapia <i>Oreochromis niloticus</i> .	45
14	Effect of different sources and different levels of phosphorus on blood packed cell volume (%) of Nile Tilapia <i>Oreochromis niloticus</i> .	47
15	15. Effect of different sources and different levels of Hemoglobin on blood (mg/dl) of Nile Tilapia <i>Oreochromis niloticus</i> .	49
16	16. Effect of different sources and different levels of phosphorus on red blood cell of Nile Tilapia <i>Oreochromis niloticus</i> .	51
17	Effect of different sources and different levels of phosphorus on white blood cell of Nile Tilapia <i>Oreochromis niloticus</i>	53

LIST OF FIGURE

Fig. No.		Page
1	Effect of different sources and different levels of phosphorus on weight gain of Nile Tilapia <i>Oreochromis niloticus</i> .	25
2	Effect of different sources and different levels of phosphorus on average daily gain of Nile Tilapia <i>Oreochromis niloticus</i> .	27
3	Effect of different sources and different levels of phosphorus on Specific growth rate of Nile Tilapia <i>Oreochromis niloticus</i> .	30
4	Effect of different sources and different levels of phosphorus on protein efficiency ratio of Nile Tilapia <i>Oreochromis niloticus</i> .	32
5	Effect of treatments with different sources and different levels of phosphorus on feed conversion ratio of Nile Tilapia <i>Oreochromis niloticus</i> .	35
6	Effect of different sources and different levels of phosphorus on percentage of releasing phosphorus in water of aquarium of Nile Tilapia <i>Oreochromis niloticus</i> .	37
7	Effect of different sources and different levels of phosphorus on whole body protein content of Nile Tilapia <i>Oreochromis niloticus</i> .	38
8	Effect of different sources and different levels of phosphorus on lipid content of Nile Tilapia <i>Oreochromis niloticus</i> .	40
9	Effect of different sources and different levels of phosphorus on body ash content of Nile Tilapia <i>Oreochromis niloticus</i> .	42

Fig. No.		Page
10	Effect of different sources and different levels of phosphorus on blood phosphorus level of Nile Tilapia <i>Oreochromis niloticus</i> .	45
11	Effect of different sources and different levels of phosphorus on blood packed cell volume (%) of Nile Tilapia <i>Oreochromis niloticus</i> .	47
12	Effect of different sources and different levels of phosphorus on Hemoglobin of Nile Tilapia <i>Oreochromis niloticus</i> .	49
13.	Effect of different sources and different levels of phosphorus on Red blood cell of Nile Tilapia <i>Oreochromis niloticus</i> .	52
14.	Effect of different sources and different levels of phosphorus on white blood cell of Nile Tilapia <i>Oreochromis niloticus</i> .	53

INTRODUCTION

One of the most important species in fish culture is Tilapia. The global aquaculture production for *Oreochromis niloticus* has reached 3.67 million tonnes (FAO Fishn Stat, 2014). Both global production and consumption of Nile tilapia have expanded at high growth rates. The rapid expansion in global tilapia production can be attributed to resistance of adversarial environmental conditions, rapid growth, and easy reproduction (El-Sayed, 1999).

The objective of the present study is to determine the optimal source and amount of phosphorus supplementation in commercial feeds with the highest growth rate and the lowest releasing in environmental and protect water quality.

One of the major problems currently facing aquaculture industry is the projected increase in production in order to meet the worldwide demand for fish. Beside this challenge, aquaculture productions are unfortunately faced with the need to resolve another problem that constrains its sustainability. Indeed, the intensification of production leads to the release of organic wastes and inorganic nutrients, such as phosphorus (P) which is known to enrich and promote eutrophication in aquatic ecosystem FAO (1996).

Phosphorus is one of the most important minerals for fish, it is essential for normal growth and bone mineralization, and plays an important role in the metabolism of carbohydrate, lipid and amino acids, as well as various metabolic processes involving buffering in body fluids (Watanabe *et al.*, 1988). The optimal amount of phosphorus supplementation in commercial feed is not only important economically, but also for environmental reasons to minimize its faecal and urinary discharge into natural waters (Bureau and Cho 1999).

Phosphorus is an essential element for both plant growth and animal performance.