

PRODUCTION OF LIFE FOODS FOR FISH

By

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B. Sc. Agric. Sc. (Animal Production), Ain Shams University, 2004

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ABSTRACT

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This study is an attempt to provide a use of *Artemia* in aquaculture in Egypt, a substitute for imported high-cost *Artemia* types, using a comparative study of some of local and imported *Artemia* species, and access to more economic results in this field.

The study included three experiments:

The experiment I was designed to investigate the morphological characters including:- cyst diameter, *Artemia* morphology (total body length), biological characters including:- hatchability at different incubation temperatures according to Sorgeloos *et al.*, (1986).

The experiment II was designed to investigate the effect of two different feed (oat and baby food) on growth survival rate and proximate composition of local, Lake Qarun *Artemia* (LQA), compared to imported, Great Salt Lake *Artemia* (GSLA).

The experiment III was conducted to determine the nutritional value of Qarun *Artemia* (LQA) compared to Great Salt Lake *Artemia* (GSLA) as a sole diet at two different stocking densities (100 and 150 nauplii/ fish) for goldfish, *Carassius auratus* fry. All conditions of the experimental evaluation in the present study were apparently satisfactory and fell under the optimal standards defined for evaluations in goldfish.

The experiments were carried out in static glass tanks in fish nutrition lab, fish research station, EL-Kanater El-Khayria, National Institute of Oceanography and fisheries (NIOF), Cairo, Egypt.

The results showed that, the mean value of the diameter of non-decapsulated cysts for LQA ranged from 212 to 230 μ m, while for the GSLA cysts it varied from 183 to 201 μ m. With regard to sex, LQA recorded higher length in both female and male than GSLA. GSLA recorded higher hatching efficiency than LQA. Hatching curve revealed that the hatching started after 15 and 13 h for LQA and GSLA, respectively, and reached T10 and T90 at (17, 15 h) and (22, 21 h), respectively. GSLA had significant higher hatching % than LQA, incubation period for 48h recorded significant ($p<0.05$) higher hatching % than 24h and the effect of incubation temperature showed that the higher one (30 °C) had higher significant ($p<0.05$) hatching % than the lower (25 °C) incubation temperature. The highest hatching % ($p<0.05$) was recorded for LQA cyst hatched for 48 hour at 25°C (96.30 %). However, the worst cyst hatching % was recorded for LQA hatched for 24 hour at 25°C (56.3%).

The highest percentage ($p<0.05$) of nauplii were recorded for LQA followed by GSLA incubated for 48 hour at 25 °C. The highest percentage ($p>0.05$) of cysts and umbrella percentages were recorded for LQA followed by GSLA incubated for 24 hour at 25 °C. GSLA showed higher % of nauplii ($p<0.05$) and cysts ($p>0.05$), but lower umbrella ($p<0.05$) than LQA. Moreover, both longer incubation hours and higher incubation temperatures recorded higher significant ($p<0.05$) nauplii % and lower ($p<0.05$) umbrella and cysts %.

The highest survival % value was recorded for LQA followed by GSLA fed oats at 4th day. However, LQA fed baby food recorded the lowest survival % value after 11 days. Differences between treatments were significant ($p<0.05$). No significant differences ($P>0.05$) were found among either the different *Artemia* or inert food sources as main effects on survival%. Survival % gradually decreased ($p<0.05$) as days after hatch increased.

The highest *Artemia* length (mm) value was recorded for GSLA fed on baby food at 11 days after hatch. GSLA recorded length ($p<0.05$) higher than LQA. Baby food results higher ($p<0.05$) length than oats.

Chemical composition showed that LQA had higher moisture ($p<0.05$), crude protein ($p<0.05$), EE and ash ($p>0.05$) than GSLA. *Artemia* fed on baby food recorded higher moisture ($p<0.05$), crude protein and EE ($p>0.05$) than oats. LQA fed on baby food recorded the highest crude protein and EE content ($p<0.05$).

The final fish length, final Body weight, and survival % were significantly affected by *Artemia* strains and level of *Artemia*. However, weight gain, and specific growth rate (mg/days) were insignificantly affected.

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CONTENTS

ITEM	Page
LIST OF TABLES	iii
LIST OF FIGURES	v
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. <i>Artemia</i> Definition	3
2.2 Taxonomy of <i>Artemia</i>	4
2.3. The Use of <i>Artemia</i> in Aquaculture	5
2.4. <i>Artemia</i> Feeding Habits	6
2.5. Biology and Ecology of <i>Artemia</i>	7
2.6. Technological aspects for hatching <i>Artemia</i> cysts	16
2.7. <i>Artemia</i> Reproduction.	18
2.8. Intensive and Extensive Culture of <i>Artemia</i>	18
2.9. Tank Culture of <i>Artemia</i>	20
2.10. <i>Artemia</i> as a Live Food for Aquatic Animals	21
2.11. Nutritional Value of <i>Artemia</i>	28
2.12. <i>Artemia</i> feeding	33
2.13. Ornamental fish	36
3. MATERIAL AND METHODS	40
3.1. Experimental aquatic animal	40
3.2. Experimental culture technique	41
3.3. Statistical analysis	48
4. RESULTS	50
4.1. Experiment I	50
4.1.1 Biometrical parameters of <i>Artemia</i>	50
4.1.2 Hatching characteristics of the experimental <i>Artemia</i> strains cysts	50
4.1.3. Effect of treatments on <i>Artemia</i> hatching or nauplii %.	52
4.1.4. Effect of treatments on <i>Artemia</i> umbrella %.	56
4.1.5. Effect of treatments on <i>Artemia</i> cysts %.	58
4.2. Experiment II	60
4.2.1. Effect of feeding treatments on survival rate of <i>Artemia</i> .	60
4.2.2. Effect of treatments on <i>Artemia</i> length.	61
4.2.3. Effect of <i>Artemia</i> strain and feed source on <i>Artemia</i> chemical composition.	67

4.3. Experiment III	70
4.3.1. Growth performance and feed utilization of Gold fish, <i>Carassius auratus</i> fed on <i>Artemia</i> .	70
5. DISCUSSIONS	76
5.1. Morphological characters and hatchability of two different <i>Artemia</i> strains.	76
5.2. Effect of tested feeds on growth performance of <i>Artemia</i> .	78
5.3. Effect of <i>Artemia</i> as a sole diet on growth performance of goldfish.	82
6. SUMMARY AND CONCLUSION	85
7. REFERENCES	91
ARABIC SUMMARY	

LIST OF TABLES

NO	page
1. Size, individual dry weight and energy content of <i>Artemia</i> instar I nauplii from different cyst sources hatched in standard conditions (35 g.l ⁻¹ , 25°C)	28
2. The proximate composition (in % of dry matter) of decapsulated <i>Artemia</i> cysts and instar I nauplii	29
3. The proximate composition of Oats	45
4. The proximate composition of Baby food	45
5. Feeding rates schedule	46
6. Cyst diameter and on-growing experimental adult Lake Qarun <i>Artemia</i> (LQA) (mean $\pm$ S.D.)	50
7. Hatching characteristics of experimental <i>Artemia</i> cysts.	51
8. Hatching rate (nauplii no.) of the experimental <i>Artemia</i> cysts.	51
9. Effect of treatments within each incubation time on <i>Artemia</i> hatching or nauplii (%)	53
10. Effect of treatments on <i>Artemia</i> hatching or nauplii (%) (pooled data)	54
11. Effect of treatments on <i>Artemia</i> umbrella (%)	56
12. Effect of treatments on <i>Artemia</i> umbrella (%) (pooled data)	57
13. Effect of treatments on <i>Artemia</i> cysts %.	58
14. Effect of treatments on <i>Artemia</i> unhatched cysts % (pooled data)	59
15. Effect of feeding treatments on <i>Artemia</i> survival (%) during different periods after hatch	62
16. Effect of <i>Artemia</i> strain and feed source as well as days after hatch on <i>Artemia</i> survival % (pooled data).	63
17. Effect of <i>Artemia</i> strain and feed source on average length of <i>Artemia</i> during different periods after hatch.	65
18. Effect of strain and feeding source as well as days after hatch on <i>Artemia</i> length (mm) (pooled data).	66
19. The effect of <i>Artemia</i> strain and feed source on chemical composition of <i>Artemia</i>	69
20. Effect of treatments on final length (cm) of Gold fish, <i>Carassius auratus</i>	71

21. Effect of treatments on final length (cm) of Gold fish, 71
Carassius auratus (pooled data)
22. Effect of treatments on final body weight (mg) of Gold 72
fish, *Carassius auratus*
23. Effect of treatments on final body weight (mg) of Gold 72
fish, *Carassius auratus* (pooled data)
24. Effect of treatments on weight gain (W.G) of Gold fish, 73
Carassius auratus
25. Effect of treatments on weight gain (W.G) of Gold fish, 73
Carassius auratus (pooled data)
26. Effect of treatments on Specific growth rate (%/day) of 74
Gold fish, *Carassius auratus*
27. Effect of treatments on Specific growth rate (%/day) of 74
Gold fish, *Carassius auratus* (pooled data)
28. Effect of treatments on survival (%) of Gold fish, 75
Carassius auratus
29. Effect of treatments on survival (%) of Gold fish, 75
Carassius auratus (pooled data)

LIST OF FIGURES

Figure	Page
1. Adult male	8
2. Head of an adult male	9
3. Adult female	9
4. Uterus of oviparous <i>Artemia</i> filled with cysts	10
5. Map of the Nile delta, with the locations of <i>Artemia</i> sampling sites	15
6. Hatching curve for the experimental <i>Artemia</i> cysts	52
7. Effect of treatments within each incubation time on hatching or nauplii %	53
8. Effect of <i>Artemia</i> strain on hatching %, regardless of incubation time and temperatures	54
9. Effect of Incubation hours on hatching %, regardless of temp. and strain of <i>Artemia</i>	55
10. Effect of Incubation temperature on hatching %, irrespective of time	55
11. Effect of treatments on <i>Artemia</i> umbrella and cysts percentage	57
12. Effect of <i>Artemia</i> strains on <i>Artemia</i> nauplii, umbrella and cysts (%)	59
13. Effect of Incubation hours on <i>Artemia</i> nauplii, umbrella and cysts (%)	60
14. Effect of Incubation temp. (°C) on <i>Artemia</i> nauplii, umbrella and cysts (%)	60
15. Effect of feeding treatments on <i>Artemia</i> survival (%) during different periods after hatch	63
16. Effect of <i>Artemia</i> strain and feed source as well as days after hatch on <i>Artemia</i> survival % (pooled data)	64
17. Effect of strain and feeding source on <i>Artemia</i> length (mm) during different periods after hatch	66
18. Effect of strain and feeding source as well as days after hatch on <i>Artemia</i> length (mm) (pooled data)	67
19. The effect of <i>Artemia</i> strain and feeding source on chemical composition of <i>Artemia</i>	68