

(*Saccharomyces cerevisiae*)

(*Artemia urmiana*)

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(*Saccharomyces cerevisiae*)

(*Artemia urmiana*)

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(/ ± /) (/ ± /) (/ ± /)
/ ± /) (P < /) (/ ± /)
(/ ± /) (/ ± /) (/ ± /)
/ (P < /)

(*Saccharomyces cerevisiae*)

(*Artemia urmiana*)

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(Soltanian *et al.*, 2007 2011)

mnn9

(Sorgeloos *et al.*, 1986)

(Marques *et al.*, 2005)

Marques *et al.*,)

(2005; Soltanian *et al.*, 2007

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(Zmora *et al.*, 2002)

Dunaliella

Chaetoceros Tetraselmis sochrysis

Sajeevan)

Scenedesmus Spirulina

(*et al.*, 2006

(Verschuere *et al.*, 1997)

(Suphantharika *et al.*, 2003; Sajeevan *et al.*, 2009)

(Marques *et al.*, 2005)

BOD

Marques *et al.*,)

(2005

Ahmadnia *et al.*,)

Agh *et al.*,)

$$\text{pH} = \frac{\log \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)}{\log \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)}$$

$$\frac{\log \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)}{\log \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)}$$

(Warland and Warland, 2001)

$$\text{pH} = \frac{\log \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)}{\log \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)}$$

(Warland and Warland, 2001)

(Lavens and Sorgeloos, 1996)

(Verschuere *et al.*, 1997)

pH

$$1000 \times \left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right)^{2.5} = \text{وزن خشک آرتمیا (میکروگرم)}$$

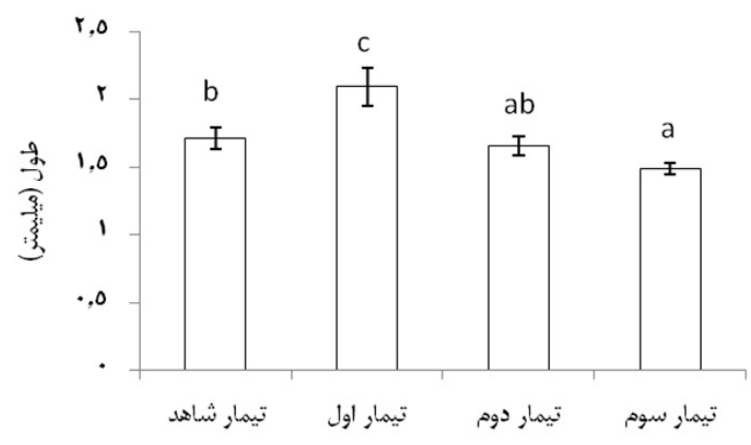
$$\left(\frac{[S. cerevisiae]}{[S. cerevisiae] + [S. cerevisiae]} \right) = \frac{1}{100} \times \dots$$

(Farhangi and Carter, 2001)

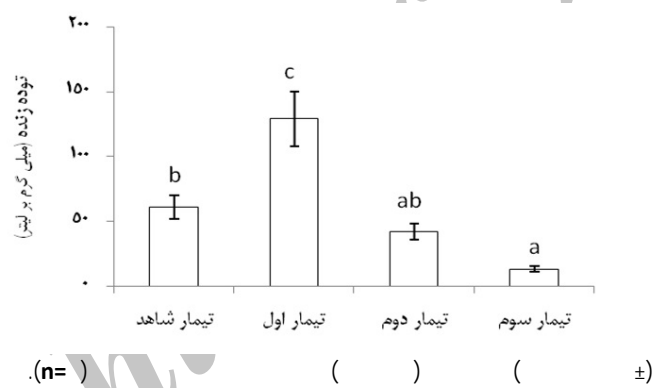
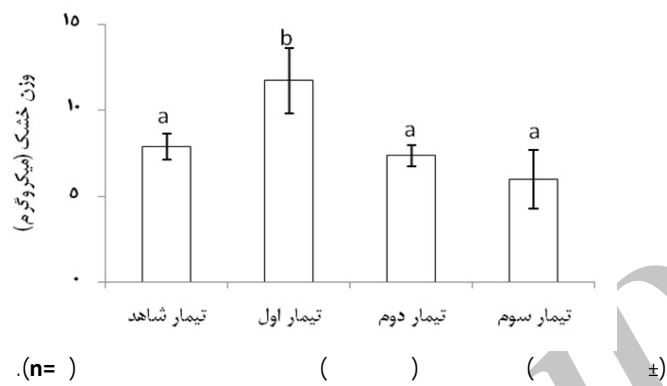
...

(ANOVA) $[(\quad - \quad) / \quad] =$
 $P < /$
 SPSS $\text{Ln} \quad) \times =$
 Excel $[\quad / (\quad)] \times =$ (Ln

Excel
 Arcsin



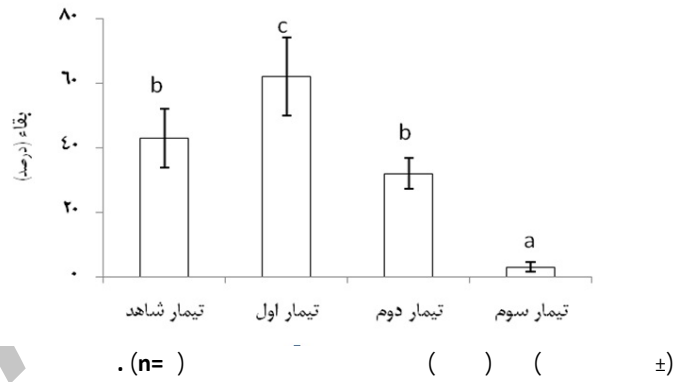
(/) (/) (n=) () (±) () / (/)



...

(n =)		(±)	
a / ± /	a / ± /	a / ± /	a / ± / ()
a / ± /	a / ± /	b / ± /	a / ± / ()
a / ± /	ab / ± /	c / ± /	b / ± / ()
a / ± /	a / ± /	b / ± /	a / ± /
a / ± /	a / ± /	b / ± /	a / ± / ()
a / ± /	b / ± /	c / ± /	b / ± /
c / ± /	ab / ± /	a / ± /	a / ± /

*



(Thinh *et al.*, 1999)

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 (/ /)

Americanophis Nereis diversicolor
 (*Glycera* spp.) (*reesei*)
 (Naegel, 1999)

S.

.(Naegel, 1999)

$l \pm l$ *Chaetoceros*

.(Juarez Carrillo, 1995)

Chaetoceros

.(Naegel, 1999) $l \pm l$) ($l \pm l$)

) (

(

(Coutteau *et al.*,

Dunaliella tertiolecta 1990)

.(Vanhaecke and Sorgeloos, 1989) () B₂

$l \pm l$ (Yamada and Sgarbieri, 2005)

- Li) ()

and Gatlin III, 2003; Yamada and Sgarbieri, .(2005

(Mannoprotein)

(Coutteau *et al.*, 1990)

/

$l \pm l$)

(

.(Naegel, 1999) (Peter *et al.*, 1990)

/

(*Artemia salina*) (

Dunaliella tertiolecta

Mason,)

.(1963 BOD

(Naegel, 1999)

(Marques *et al.*, 2005)

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(Lashkarizadeh, 2010)

S.)

/ (Cerevisiae × Chaetoceros

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(Naegel, 1999)

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/ ()

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Effects of Different Levels of Yeast (*Saccharomyces cerevisiae*) Feeding on Growth Factors and Survival of *Artemia urmiana*

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Abstract

Artemia plays a major role in aquaculture as one of the most important live foods used in larval rearing. The aim of this study was to determine the optimum level of feeding in *Artemia urmiana* with Baker's yeast (*Saccharomyces cerevisiae*). Triplicate groups were fed with different levels of *S. cerevisiae* yeast 0.625 (control), 1.25 (T₁), 2.50 (T₂), 5.0 (T₃) (mg yeast per 1000 nauplii) for 10 days. Culture conditions such as temperature (29°C), Dissolved oxygen (5 mg/l), Salinity (60 g/l) and pH (8) were set according to Standard Method. At the end of the trial, total length, dry weight, survival rate and biomass production were measured. Moreover, average daily growth (ADG), body weight increase (BWI), specific growth rate (SGR) and condition factor (CF) were determined. The results showed that total length (2.10±0.14 mm), dry weight (11.75±1.91µg), biomass production (129.55±21.3 mg/l) and survival rate (62.2±12.2 %) of T₂ were significantly higher than. Also ADG (1.12±0.19 mg), BWI (11.21±1.89) and SGR (30.71±1.41) were significantly higher in T₂ compared to other treatments. The highest CF was observed in T₄ (60.47±21.46) and the lowest was observed in T₂ (22.89±3.01) (P<0.05). According to these results, the best level of *Artemia* feeding with *S. cerevisiae* was 1.25 mg of *S. cerevisiae* per 1000 *Artemia nauplii*. Also our results indicated that food efficiency depends on the amount of food available, and it was increased with food availability to a certain level.

Keywords: *Artemia urmiana*, Optimum feeding, Baker yeast (*Saccharomyces cerevisiae*), Growth factors, Survival

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