

EFFECTS OF DIFFERENT FEEDING TYPE ON THE
PRODUCTION OF MILK AND CARRON

(Lactuca sp.)

DEPARTMENT OF VETERINARY MEDICINE

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SCHOOL OF AGRICULTURE AND FOOD SCIENCE
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**EFFECTS OF DIFFERENT FEEDING ON THE PRODUCTION
OF MARINE COPEPOD (*Acartia sp.*)**

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ABSTRACT

In this study, marine copepod *Acartia sp.* from the order Calanoida was chosen as studied species to find out the effects of different feeding towards the size and population. There were six feeding treatments with a control. The feeding treatments consist of four monoalgal diets (*Isochrysis sp.*, *Tetraselmis sp.*, *Nannochloropsis sp.* and *Chlorella sp.*), rice bran and yeast. No food was given for control and each treatment was done in three replicates. The copepod was fed once daily. The size of *Acartia sp.* for each treatment was measured once a week while the population was assessed every 48 hours. The experiment was conducted for one month. Based on the results collected at the end of the experiment (week 4), the size of copepods for *Isochrysis sp.* treatment was $591.15 \pm 5.33 \mu\text{m}$ for TL1 (height) and $233.19 \pm 9.27 \mu\text{m}$ for TL2 (width), *Tetraselmis sp.*; $497.68 \pm 5.51 \mu\text{m}$ (TL1) and $217.30 \pm 8.00 \mu\text{m}$ (TL2), *Nannochloropsis sp.*; $411.34 \pm 20.74 \mu\text{m}$ (TL1) and $164.13 \pm 21.02 \mu\text{m}$ (TL2) while for *Chlorella sp.* the size was $407.21 \pm 15.71 \mu\text{m}$ (TL1) and $162.18 \pm 9.77 \mu\text{m}$ (TL2). For population, the number of individual for *Isochrysis sp.* treatment was 313 individual 100 ml^{-1} , *Tetraselmis sp.*; 278 individual 100 ml^{-1} , *Nannochloropsis sp.*; 127 individual 100 ml^{-1} dan *Chlorella sp.*; 107 individual 100 ml^{-1} . For rice bran, yeast and control, no size and population was recorded at the end of the experiment since all the copepod died within the first week the experiment was conducted. Overall, *Isochrysis sp.* treatment showed the best performance followed by *Tetraselmis sp.*, *Nannochloropsis sp.* and *Chlorella sp.* while rice bran and yeast treatment showed the poorest performance of all.

ABSTRAK

Dalam kajian ini, kopepod marin, *Acartia sp.* telah dipilih sebagai spesies kajian untuk melihat kesan pemberian makanan yang berbeza terhadap saiz dan populasi kopepod. Terdapat enam rawatan makanan dan satu kawalan dalam kajian ini. Ia terdiri dari empat rawatan monoalgal (*Isochrysis sp.*, *Tetraselmis sp.*, *Nannochloropsis sp.* dan *Chlorella sp.*), sekam padi dan yis. Tiada makanan diberi untuk kawalan dan setiap rawatan makanan mempunyai tiga replikasi. Kopepod diberi makan sekali sehari. Saiz *Acartia sp.* diukur seminggu sekali manakala populasinya diperhatikan setiap 48 jam. Eksperimen ini dijalankan selama empat minggu. Berdasarkan keputusan, saiz di akhir eksperimen (minggu keempat) bagi kopepod yang diberi rawatan *Isochrysis sp.* adalah $591.15 \pm 5.33 \mu\text{m}$ bagi TL1 (panjang) dan $233.19 \pm 9.27 \mu\text{m}$ bagi TL2 (lebar), *Tetraselmis sp.*; $497.68 \pm 5.51 \mu\text{m}$ (TL1) dan $217.30 \pm 8.00 \mu\text{m}$ (TL2); *Nannochloropsis sp.*; $411.34 \pm 20.74 \mu\text{m}$ (TL1) dan $164.13 \pm 21.02 \mu\text{m}$ (TL2) manakala bagi *Chlorella sp.*, saiznya adalah $407.21 \pm 15.71 \mu\text{m}$ (TL1) dan $162.18 \pm 9.77 \mu\text{m}$ (TL2). Bagi populasi, bilangan kopepod di akhir tempoh eksperimen bagi rawatan *Isochrysis sp.* adalah 313 individu 100 ml^{-1} , *Tetraselmis sp.*; 278 individu 100 ml^{-1} , *Nannochloropsis sp.*; 127 individu 100 ml^{-1} dan *Chlorella sp.*; 107 individu 100 ml^{-1} . Untuk rawatan sekam padi, yis dan kawalan, tiada saiz dan populasi dapat direkodkan bagi minggu keempat kerana kesemua kopepod mati dalam tempoh seminggu eksperimen dijalankan. Secara keseluruhannya, rawatan *Isochrysis sp.* menunjukkan prestasi terbaik diikuti oleh *Tetraselmis sp.*, *Nannochloropsis sp.* dan *Chlorella sp.* manakala rawatan sekam padi dan yis menunjukkan prestasi yang terburuk.