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Role of Camel's Milk in Growth Rate of *Chroococcus* Sp

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I. Introduction

Cyanobacteria are a very old group of organisms and represent relics of the oldest photoautotrophic vegetation in the world that occur in freshwater ,marine and terrestrial habitats (Mundt and Teuscher, 1988).

Chroococcus, a unicellular organism that is a genus of cyanobacteria, like all cyanobacteria, *Chroococcus* is a prokaryote and therefore lacks any of the membranous organelles of eukaryotes. Known for its underwater habitat, *Chroococcus* prefers the sludge of lake and river bottoms (Ditty *et al.*, 2003).

Cyanobacterial secondary metabolites represent a vast diversity of structures and have been isolated from a number of cyanobacterial genera from different geographical locations. During the last two decades, cyanobacterial secondary metabolites have attracted the attention of researchers mainly due potential therapeutic use of several secondary metabolites include a range of compounds showing animal toxicity and antibacterial, antifungal, anti-inflammatory, antimalarial, antiprotozoal, antituber-culosis, antiviral, antitumor and cytotoxic activities (Gademann and Portmann, 2008; Mayer *et al.,* 2009)

In addition to the role of cyanobacteria in the application of biotechnology in the production of hydrogen gas and the production of ammonia and nitrogen fixation and production of enzymes and pharmaceutical products and use food protein for the treatment of heavy water and the excretion of toxins and their impact on the environment in addition to its role in the analysis of crude oil and some of its derivatives to simple compounds non-polluting (Kumazawa and Mitsui, 1989; Kostreba, 2001; Raghukumar, 2001)

The camel's milk is characterized immune-ological advantages unique, since it has a good quality of proteins of the preventive efficacy against bacteria and viruses such as lactoperoxidase, lysozyme and as well lactoferrin. It has an important role in reducing the ability of germs because of injury, inhibition of enzyme cysteine protease found in bacteria and viruses as well as some parasites, the milk also contains a high concentration of minerals(Sodium, Potassium ,iron ,copper ,zinc and magnesium) and vitamins A, B2,C and E (Ohashi *et al.*, 2003; Kamal *et al.*, 2007 ; Al-Hashem *et al.*, 2009).

The present study aimed to investigate the role of camel's milk in the growth of moss through by addition of different concentrations of milk to the farmer of *Chroococcus sp.*

II. Materials and Methods

a) Isolation and purification of algae

Isolated and scrubbed algae according to (Stien,1973), as was access to unialgal cultures were then purified for the purpose of obtaining axenic cultures depending on the method of (Al-Arajy, 1996) and then diagnosed based on)Desikachary,1959; Prescott, 1975).

b) Development and propagation of algae

Algae were grown using a the middle Chu-10 axis by (Al-Arajy, 1996) and after obtaining sufficient amounts transferred to the 100 ml bottles filled with 70 ml of the former the middle and incubated at a temperature (25 ±3) ˚ C .

c) Measuring the rate of growth

The growth rate of algae counted directly by Chamber Shidu (Coombs et al., 1986).

d) Camel's milk

Milk samples were collected early in the morning from camel farm in the Al-Nassiriya city, Thi-Qar province, Iraq. Milk was collected from camel by hand milking as normally practiced by the farmers. The

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samples were collected in sterile screw bottles and kept in cool boxes until transported to the laboratory.

e) experimental groups

Different concentrations of camel's milk and added to the algal farms which were divided into five groups as following:

Group I : control group, contained 100 ml from Chroococcus sp. only.

Group II : contained 100 ml of Chroococcus sp. alga with 1 ml of camel's milk (1%).

Group III : contained 100 ml of Chroococcus sp. with 2 ml of camel's milk (2%).

Group IV : contained 100 ml of Chroococcus sp. with 3 ml of camel's milk (3%).

Group V : contained 100 ml of Chroococcus sp. with 5 ml of camel's milk(4%).

III. Results

The results of the present study shown in table (1). The results indicated the camel's milk caused a significant increase($p< 0.05$) in the growth of algae Chroococces for the duration of the experiment with different concentrations of milk (1, 2, 3and 5ml/100ml of farms) compared with the control group . The highest rate of growth of algae on the first day in group(V).

Results showed the first day a significant increase ($p< 0.05$) in the growth of rate of Chroococces in groups (II,III ,IV and V) compared with group (I) after one day of treatment with different concentrations (1 %, 2 %, 3 % and 5 %) of camel's milk . Also , there was a significant increase ($p< 0.05$) in the growth rate groups(III) and (V) compared with group(II) ,While, the results recorded a significant decrease ($p <0.05$) in the growth of rate of Chroococces in group(IV) compared with group(II) the same day .

After third day of treatment , the results ¡ndicated a significant increase ($p< 0.05$) in the growth of rate of Chroococces in groups (II,III ,IV and V) compared with control group (group I) , Also , there was a significant increase ($p< 0.05$) in the growth rate groups(III) and (V) compared with group(II) ,While, the growth rate in group(IV) decreased significantly ($p <0.05$) compared with group(II) .

After fifth day of treatment , the results indicated a significant increase ($p< 0.05$) in the growth of rate of Chroococces in groups (II,III ,IV and V) compared with control group (group I) , Also , there was a significant increase ($p< 0.05$) in the growth rate group (III) compared with group(II).While , the results recorded a significant decrease ($p <0.05$) in the growth of rate of Chroococces in groups (IV) and (V) compared with group(II).

After seventh day of treatment , the results indicated a significant increase ($p> 0.05$) in the growth of rate of Chroococces in groups (II) and (III) compared with control group , While , the results recorded a significant decrease ($p <0.05$) in the growth of rate of Chroococces in groups (IV) and (V) compared with group(I). The growth rate of Chroococces decreased significantly ($p <0.05$) in groups (IV) and (V) compared with group(II). While, the results recorded a significant increase ($p< 0.05$) in group (III) compared with group(II).

After ninth day of treatment , the results indicated a significant increase ($p< 0.05$) in the growth of rate of Chroococces in groups (II) and (III) compared with control group , While , the results recorded a significant decrease ($p< 0.05$) in the growth of rate of Chroococces in groups (IV) and (V) compared with group(I). Also, there was a significant decrease ($p< 0.05$) in the growth of rate of Chroococces in groups (IV) and (V) compared with group(II). While , the results recorded a significant increase ($p< 0.05$) in group (III) compared with group(II).

Table 1 : Role of camel's milk in growth rate of chroococcus sp

treatments	Growth rate (cells\1 ml)				
	1 day	3 days	5 days	7 days	9 days
Group I	93.00 ±1.73 ^{A}	65.33 ±2.91 ^{D}	71.33 ±0.88 ^{D}	86.00 ±3.06 ^{B}	78.00 ±5.77 ^{C}
Group II	125.67 ±2.96 ^{A}	80.00 ±2.89 ^{D}	119. 0 ±0.58 ^{A}	109.67 ±5.78 ^{B}	100.00 ±4.62 ^{C}
Group III	139.67 ±2.91 ^{B}	152.00 ±1.15 ^{A}	145.00 ±2.89 ^{B}	127.33 ±1.45 ^{C}	109.67 ±5.78 ^{D}
Group IV	109.67 ±5.78 ^{A}	78. 0 ±1.15 ^{C}	94.0 ±1.15 ^{B}	73.00 ±1.73 ^{CD}	70.67 ±1.76 ^{D}
Group V	195.67 ±2.96 ^{A}	92.00 ±1.15 ^{B}	91.33 ±0.88 ^{B}	73.33 ±0.88 ^{C}	68.00 ±1.15 ^{D}

Differences letters refers to a significant differences at $p<0.05$

IV. Discussion

Algae are many benefits as a source for the production of many materials economically important, which encouraged the cultivation and production of biomass, has been used for the production of pharmaceuticals, cosmetics different materials other industrial as well as animal feed and food additives for human food (Grima *et al*., 1990). As it raises to the surroundings of many materials, such as simple sugars and multiple, alcohols and enzymes, and some of which secreted material impact of anti-bacterial, fungi and tumors (Moore *et al*., 1996).

The increase of growth rates of *Chroocecces* sp. may be attributed to supply of algae with nutrients and minerals important for growth, where is the camel's milk is rich in minerals (sodium, potassium, iron, copper, zinc, magnesium) and vitamins (A, B2, C, E) also contains a high concentration of a protein similar to insulin (Kamal *et al.,* 2007; Al-Hashem *et al.,* 2009). These materials play a fundamental role in the increase of cell divisions and increase the breadth and elongation of the cells and thus increasing the effectiveness of the physiological processes photosynthesis thus, a supply algae carbohydrate materials manufactured in this process and this in turn improves the rate of growth (Sahaf , 2000)

V. Conclusion

Our results demonstrate that camel milk is able to events noticeable change in the rate of growth of algae. Algae contains many chemical compounds that can be used in medical, economically and industrially. Further studies are required, using a human population, to confirm theses protective effects.

References Références Referencias

1. Al- Hashem, F.; Dallak, M.; Bashir, N. and Abbas, M. Camel's milk protects against cadmium chloride induced toxicity in white albinorats. *American Journal of Pharmacology and Toxicity.;* 4(3):107 – 117 (2009).
2. Kostreba, L. Oil spill remediation efforts in the middle east. *Internet file: IA:* Oil spill remediation efforts in the middle east, (2001).
3. Moore, R.; Smith, D.; Patterson, M. and Susan, L. The search for new anti-tumor drugs from blue-green algae. *Curr. Pharm.* Design, 2:317-330 (1996).
4. Al-Arajy, M. Studies on the mass culture of some micro algae as food for fish Larvae. ph. D. thesis, Basrah. Univ. (1996).
5. Desikachary, T. V. Cyanophyta Indian .Concil of Agricultural Research, New Delhi, India (1959).
6. Ditty, J.; Williams, S. and Golden, S. A cyanobacterial circadian timing mechanism . *Annu. Rev. Genet.;* 37:513 – 43 (2003).
7. Gademann, K. and Portmann, C. Scondary metabolites from cyanobacteria : complex structure and powerful bioactivities. *Curr. Org. Chem.,*12:326-341 (2008).
8. Grima, F.; Fernaandes, F. ; Camacho, F. and Chisti, Y. Bioreactors light regine , mass transfer and scalen . *P. J. Biotech.;* 70:231 – 247 (1990).
9. Kamal , A.; Salama , O. and El-Saied , K. Changes in amino acids profile of camel's milk protein during the early lactation .*Int. J. Dairy.* Sci.,2:226-234 (2007).
10. Kumazawa, S. and Mitsui, A. Photosynthetic Properties of Synchronously grown aerobic nitrogen- fixing unicellular cyanobacterium. In: Abst. Ann. Meeting of *Amer. Soc.* Microbiol. P268 (1989).
11. Mayer, A.; Rodrigue, Z. ; Berlink, R. and Hamann, M. Marine pharmacology in 2005 – 6 : Marine compounds with anthelmintic, antibacterial, anticoagulant, antifungal, anti–inflammatory, antimalarial, antiprotozoal, antituber-culosis and antiviral activities; affecting the cardio-vascular, immune and nervous systems, and other miscellaneous mechanisms of action. *Biochim. Biophys. Acta.,* 1790:283 – 308 (2009).
12. Mundt, S. and Teuscher, E. Blue – green algae as a source of Pharmacologically – active compound. *Pharmazie.;* 43:809 – 815 (1988).
13. Ohashi, A.; Murata , E.; Yamamoto, K.; Majima, E.; Sano, E.; Le, Q. and Katunuma, K. New functions of lactoferrin and beta-casein in mammalian milk as cysteine protease inhibitors. *Biochem. Biophys. Res. Commum.,* 20:98-103 (2003).
14. Prescott, G. Algae of the Western great lake area. Ellion C., Brown Co. pub., Dugugue, Lowa, USA (1975).
15. Raghukumar, C.; Vipparty, V.; David, J. and Chandramohan, D. Degradation of crude oil by marine cyanobacteria. *Abs. Appl. Microbiol. and biotechnol. Vol.* 57: 433-436 (2001).
16. Sahaf, H. Applied Plant Nutrition, Press House of Wisdom, Baghdad University, Ministry of Higher Education and Scientific Research, the Republic of Iraq, (1989).
17. Stein, J. R. Handbook of phycological methods. Cambridge Univ. *press.* Cambridge, UK. (1973).

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