Faculty of Marine Sciences

KAU Publications in ISI Journals in 2007

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Faculty	*Marine Sciences*
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Paper Title	*A comparative study of the components of the hard coral Seriatopora hystrix and the soft coral Xenia umbellata along the Jeddah coast, Saudi Arabia*
Source	*REVISTA DE BIOLOGIA MARINA Y OCEANOGRAFIA Volume: 42 Issue: 3 Pages: 207-219*
Impact Factor	*0.420*
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Publication year	*2007*

Abstract

In this study, the structure of the polyps and the cell types of the hard coral Seriatopora hystrix and the soft coral Xenia unzbellata were compared, together with the composition of the fatty acids in their tissues. S. hystrix displayed an apparent lack of specialized feeding cells, notably the relatively small number of mucous gland cells and the low percentage of venom containing nematocysts. P-mastigophores accounted for 1.52-5.7% and, B-mastigophores for 1.28% of the nematocysts. Conversely there was a high percentage of holotrichs nematocysts (24.86 - 55.5%) in the tentacles and mesenterial filaments respectively. Zooxanthellae were abundant in the gastrodermis. These charateristics suggest that S. hystrix relies essentially upon autotrophic nutrition. The polyps of X. umbellata were devoid of cnidae, and mucous glands were in abundance, particularly in the lower part of the polyp. The presence of particulate matter in the coelenteron, and low number of zooxanthellae indicate that X. umbellata is a suspension feeder, using mucus to trap the particles on the pinnate tentacles.

Differences were also revealed by a comparative study of their chemical composition. X. umbellata had a high protein and lipid content, whilst S. hystrix was characterized by high calcium carbonate content. In S. hystrix, the fatty acids were found to be predominantly saturated fatty acids (87.3%), the most abundant being 16:0 and 18:0. X. umbellata showed a predominance of unsaturated fatty acids (77.7%), the most abundant being 16:1 and 18:1. The differences in morphology and in biochemical composition suggest that S. hystrix has a greater reliance on autotrophic feeding whilst X. umbellata is a more heterotrophic suspension feeder.

Keywords : Cnidae Type; Competition; Coral Reefs; Feeding Strategies; Red Sea

KAU Publications in ISI Journals in 2008

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Paper Title	*Effects of different feeding frequency on the growth, survival and feed conversion ratio of the Asian sea bass Lates calcarifer juveniles reared under hypersaline seawater of the Red Sea*
Source	*AQUACULTURE RESEARCH, Volume: 39, Issue:6 Pages:561-567*
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ISSN	*1355-557X*
Publication year	*2008*

Abstract

The effects of several feeding frequencies of two, three and four times per day on Asian sea bass Lates calcarifer growth performance have been tested. Fish were reared under ambient Red Sea water conditions; these fish were fed diets containing 48% crude protein for 45 days. The present study was carried out at the Faculty of Marine Science (Abhor branch). The results show that fish population fed twice daily had significantly better growth with a mean body weight and daily weight increment of 59.04 and 1.31 g, respectively ($P < 0.05$), than the other population fed three or four times daily. No significant differences were observed between fish fed two and three times daily in length gain and daily length increment. Growth in weight and length was increased gradually and no mortality was observed during the experimental period. In all the feeding trials, the body weight increased with an increase in length (R-2=0.87 and 0.90). The feed conversion ratio (FCR) was significantly affected by feeding frequencies, with a significantly better FCR value of 2.43 in fish fed twice daily ($P < 0.05$) compared with the other two populations fed three and four times daily. These results led to the conclusion that feeding two times daily would result in better growth and utilization of feed for the Asian sea bass L. calcarifer juvenile.

Keywords : Asian Sea Bass; Lates Calcarifer; Feeding Frequency; Growth; Survival; Feed Conversion Ratio; Hyper Saline

KAU Publications in ISI Journals in 2008

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Paper Title	*Mineralogical and chemical composition of the mud fraction from the surface sediments of Sharm Al-Kharrar, a Red Sea coastal lagoon*
Source	*OCEANOLOGIA Volume: 50 Issue: 4 Pages: 557-575*
Impact Factor	*1.038*
ISSN	*0078-3234*
Publication year	*2008*

Abstract

Interaction between continental and marine end-members gives rise to the natural biogeochemical processes in Sharm Al-Kharrar, a lagoon in the and Red Sea region. Twenty-nine surface sediment samples were collected from the area and their mud fraction analysed for grain size, OC, CaCO3, mineralogy and elemental composition. The mud fraction consisted of a mixture of siliciclastic/calcareous materials. dominated by silt size materials and characterised by low OC (average 0.71% +/- 0.13); CaCO3 varied widely, with an average of 45% +/- 18. Concentrations of Al, Fe,Mn, Cu, Ni, Cr, V and Ba showed a wide range of variation throughout the Sharm. The results were normalised to Al and subjected to cluster analysis in order to examine the relations between the mineralogy and the elemental composition. The contents of Al, Fe, Mn, Cu Ni, Cr, V and Ba appeared to be influenced by the mixing of the two end-members in addition to the physiochemical processes associated with the mixing between episodic freshwater flooding and seawater. Zn was the single element, that showed a slight departure from the mixing model.

Keywords : Sediments; Mud fraction; Major and trace elements; Coastal lagoon; Red Sea

KAU Publications in ISI Journals in 2009

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Paper Title	*Fecal sterols and pahs in sewage polluted marine environment along the eastern Red Sea coast, South of Jeddah, Saudi Arabia*
Source	*INDIAN JOURNAL OF MARINE SCIENCES Volume: 38, Issue: 4 Pages: 404-410*
Impact Factor	*0.310*
ISSN	*0379-5136*
Publication year	*2009*

Abstract

Water and sediment samples were takes near the sewage discharge point on the eastern Red Sea Coast of Jeddah and analyzed for PAH and fecal sterols like coprostanol, cholesterol and cholesterol. PAH were estimated spectrofluorometrically and then further analyzed by GC-MS. Sterols were derivative by BSTFA into their corresponding trimethyl silyl derivatives and then analyzed by gas chromatogaphy and quantified with standard sterols. PAH ranged from 1.5 to 6.5 mu g l(-1) in eight stations. Concentration of coprostanol in water samples showed a maximum of 8.2 mu g l(-1) at station XVIII and minimum 0.1 mu g l(-1) at station 10C. The analysis of the sediment samples indicated much higher values for fecal sterols. It was found to be 785 mu g l(-1) in sediment and 6.5 mu g l(-1) in the water samples at station XVIII. PAH did not show any distinct increase in the sediment samples. According to Grimaldt equation the value of r* (5 beta / 5 beta + 5 alpha) was determined. Out of a total of sixteen samples, fourteen samples had a value of 0.7 or higher than 0.7. This indicate a definite and a positive sewage contamination infecting almost the whole area studied. The GC-MS of the PAH indicate the presence of phenanthrene, benzophenone and 2,4-diisoprophyl naphthalene, methylnaphthalene, and 9-H-methylene flourene. Present study infers that the sewage; either untreated or partially treated is dumped into the sea.

Keywords : Coprostanol; Toxicity; Eastern Jeddah; Sewage Pollution

KAU Publications in ISI Journals in 2009

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Paper Title	*Mycosporine-like amino acids in six scleractinian coral species*
Source	*OCEANOLOGIA Volume: 51 Issue: 1 Pages: 93-104*
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Publication year	*2009*

Abstract

Mycosporine-like amino acids (MAAs) were studied in stony coral species (Fungiidae) along the Eastern coast of the Red Sea. Six species - Fungia scutaria, F. danai, F. corona, F. repanda, Ctenactis echinata, and Lithophyllor lobata - were examined for MAAs at water depths of 5, 10, 15 and 20 in. Protein and chlorophyll were also determined and showed higher contents in winter than in summer. Generally, the total content of MAAs in summer was found to be approximately three times greater than in winter. Overall, concentrations of MAAs were greatest; at a depth of 5 in. Porphyra-334 was the most abundant MAA in F. scutaria and F. danai, whereas asterina-330 was either not detectable (e.g. L. lobata) or present in low concentrations (e.g. F. danai, F. repanda and C. echinata). Shinorine was not detected in F. danai or L. lobata. Both C. echinata and L. lobata had the lowest concentrations of MAAs, presumably because of their large calcareous skeletons. The variation in MAA concentrations among seasons and water depths is probably due to a number of factors, including the intensity of solar radiation, turbidity and phylogenetic variation.

Keywords : Red Sea; Jeddah Coast; Hard Corals; Fungia Spp.; Mycosporine-Like Amino Acids

Faculty of Marine Sciences

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Paper Title	*Insecticidal Metabolites from the Green Alga Caulerpa racemosa*
Source	*Clean-Soil Air Water* *Volume: 38 Issue: 5-6 Article Number: Pages: 548-557*
Impact Factor	*1.412*
ISSN	*1863-0650*
Publication year	*2010*

Abstract

The purpose of this study is the isolation and identification of metabolites from the green alga Caulerpa racemosa and assaying them against the medically important mosquito Culex pipiens. The chloroform/methanol extract of the green alga C. racemosa afforded a number of metabolites, as caulerpin (1), caulerpynyne (3), phytol (4), 10-keto-3,7,11-trimethyldodecanoic acid (5), a number of unsaturated compounds in addition to caulerpinic acid (2), the alkaline hydrolysis product of caulerpin. In summary, the larvicidal activity of caulerpin and caulerpinic acid were tested against C. pipiens mosquito (filarial victor) leading to the identification of novel effective mosquitocidal compounds.

Keywords: Caulerpa racemosa; Caulerpin; caulerpinic acid; caulerpynyne; Culex pipiens; Mosquito

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Paper Title	*Antibacterial Sphingolipid and Steroids from the Black Coral Antipathes dichotoma*
Source	*Chemical & Pharmaceutical Bulletin* *Volume: 58 Issue: 12 Article Number: Pages: 1635-1638*
Impact Factor	*1.698*
ISSN	*0009-2363*
Publication year	*2010*

Abstract

From the black coral Antipathes dichotoma, a sphingolipid (2S*,3S*,4E,8E)-2N-[tetradecanoyl]-4(E),8(E)-icosadiene-1, 3-diol (1) and a steroid (22E)-methylcholesta-5,22-diene-1 alpha,3 beta,7 alpha-triol (2) were isolated. Other known compounds, 3 beta,7 alpha-dihydroxy-cholest-5-ene (3) (22E,24S),5 alpha,8 alpha-epidioxy-24-methylcholesta-6,22-dien-3 beta-ol (4) and (22E,245),5 alpha,8 alpha-epidioxy-24-methylcholesta-6,9(11),22-trien-3 beta-ol (5). The structures were established on the basis of NMR spectroscopic analysis and comparison with literature The antibacterial activity of five compounds was evaluated.

Keywords: Black coral; Antipathes dichotoma; sphingolipid; Trihydroxy steroid; Antibacterial

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Paper Title	*3 beta, 7 beta-Dihydroxy-5 alpha-cholestan-11-one A new oxidation pattern of cholestane skeleton from Laurencia papillosa*
Source	*Biochemical Systematics and Ecology* *Volume: 38 Issue: 4 Article Number: Pages: 861-863*
Impact Factor	-
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Paper Title	*Efficient photoelectrochemical splitting of water to H-2 and O-2 at nanocrystalline carbon modified (CM)-n-TiO2 and (CM)-n-Fe2O3 thin films*
Source	*International Journal of Nanotechnology* *Volume: 7 Issue: 1 Article Number: Pages: 69-98*
Impact Factor	*1.234*
ISSN	*1475-7435*
Publication year	*2010*

Abstract

Carbon modified titanium oxide (CM-n-TiO2) and iron (111) oxide (CM-n-Fe2O3) thin films were synthesised by thermal flame oxidation of Ti and Fe metal sheets, respectively. Under white light illumination of intensity of 100 mW cm(-2) from a 150 W xenon lamp, the optimised CM-n-TiO2 and CM-n-Fe2O3 photoelectrode were found to split water to H-2 and O-2 with maximum photoconversion efficiencies of 14.04% and 6.5%, respectively. The maximum photoconversion efficiencies obtained from wavelength dependent monochromatic photocurrents were found to be 13.79% and 5.9% for CM-n-TiO2 and CM-n-Fe2O3, respectively, under the same illumination intensity from the xenon lamp. Importantly, under natural global AM 1.5 sunlight illumination of I sun, the maximum photoconversion efficiencies for water splitting were found to be 12.26% for CM-n-TiO2 and of 5.1% for CM-n-Fe2O3.

Keywords: Water splitting; Carbon modified titanium oxide; Iron oxide; Solar hydrogen production

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Paper Title	*Ostracods and the Holocene palaeolimnology of Lake Qarun, with special reference to past human-environment interactions in the Faiyum (Egypt)*
Source	*Hydrobiologia* *Volume: 654 Issue: 1 Article Number: Pages: 155-176*
Impact Factor	*1.754*
ISSN	*0018-8158*
Publication year	*2010*

Abstract

We present an ostracod record covering the past two millennia from an 8.25-m core taken from Lake Qarun, in the Faiyum Depression of Egypt. The occurrence of ostracod species in the lake is controlled primarily by variations in solute composition, which are in turn related to shifts in catchment land use. At times when the Faiyum Depression supported thriving agriculture, lake water contained Na+-Cl- brine, and Cyprideis torosa dominated the ostracod assemblage. When the Faiyum Depression experienced periods of environmental and economic decline, lake water contained Na+-HCO3 (-) brine, and Limnocythere inopinata dominated. The relative abundance of other ostracod species provides additional information about past conditions in Lake Qarun including salinity and lake level changes. Overall, the ostracod assemblages provide evidence for human influences in the Faiyum, which extend back before instrumental or detailed observational records began.

Keywords: Ostracoda; Saline lake; Holocene