FECAL COLIFORM AND E.COLI CONTAMINATION IN CULTURED OYSTER, (CRASSOSTREA IREDALE), WATER AND SEDIMENT OF SETIU LAGOON, TERENGGANU

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Fecal coliform and e.coli contamination in cultured oyster, (Crassostrea iredalei), water and sediment of Setiu Lagoon, Terengganu / Kuik Soon Ngee.

Lihat sebelah

FECAL COLIFORM AND *E.coli* CONTAMINATION IN CULTURED OYSTER, (*Crassostrea iredalei*), WATER AND SEDIMENT OF SETIU LAGOON, TERENGGANU.

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:
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Table of Contents

List of Table

List of Figures

List of Symbols

APHA	-	American Public Health Association
Apr	-	April
Aug	-	August
ASEAN	-	Association of South East Asia Nations
°C	-	degree centigrade
CSSP	-	Canadian Shellfish Sanitation Program
Dec	-	December
DO	-	dissolve oxygen
DOE	-	Department of Environment
DSP	-	diarrheic shellfish poison
E. coli	-	*Escherichia coli*
EU	-	European Union
FAD	-	Food and Drug Administration
FC	-	fecal coliform
FDA	-	Food and Drug Administration
g	-	gram
GAD	-	glutamic acid decarboxylase
INWQS	-	Interim National Water Quality Standards
kg	-	kilogram
M	-	molarity
Mg	-	miligram

mL	-	mililitre
mm	-	milimetre
MF	-	Membrane Filter
MPN	-	most probable number
MTF	-	Multiple-tube Fermentation Technique
NaCl	-	natrium chloride
NaOH	-	natrium hydroxide
Nov	-	November
NSSP	-	National Shellfish Sanitation Program
Oct	-	October
pH	-	potential of hydrogen
ppt	-	parts per thousand
PSP	-	Paralytic shellfish poison
Sept	-	September
TC	-	total coliform
USEPA	-	United States Environmental Protection Agency
WHO	-	World Health Organisation

LIST OF APPENDICES

ABSTRACT

This study is aimed to evaluate the level of fecal contamination that caused by sewage pollution in Setiu lagoon, Terengganu and also to determine whether the cultured oysters in the lagoon are safe for human consumption. Three sampling trips were conducted on 13th September 2006, 12th October 2006 and 14th December 2006. Fourteen sampling stations were established in the lagoon. Total coliform, fecal coliform, *Escherichia coli* (*E. coli*) counts in water, sediment and cultured oysters (*Crassostrea iredalei*) were estimated by using Multiple Test Tube Fermentation of Standard Method. GAD test was carried out to determine the presence of *E. coli* in the samples. The mean of total coliform, fecal coliform and *E. coli* in waters of Setiu lagoon were 652.88 MPN.100 mL^{-1}, 219.46 MPN.100 mL^{-1} and 22.07 MPN.100 mL^{-1} respectively. The mean of total coliform, fecal coliform and *E. coli* in the sediments of Setiu lagoon were 37.83 $MPN.g^{-1}$, 20.49 $MPN.g^{-1}$ and 4.03 $MPN.g^{-1}$ respectively. The mean of total coliform, fecal coliform and *E. coli* counts in cultured oysters were 176.93 $MPN.g^{-1}$, 245.52 $MPN.g^{-1}$ and 1.72 $MPN.g^{-1}$ respectively. The presence of total coliform, fecal coliform and *E. coli* in the waters and sediment of Setiu lagoon indicates that the lagoon has been contaminated by domestic sewage effluent. This study shows that, the level of fecal coliform is over the safety level for aquaculture but the *E. coli* in Setiu lagoon are still within the safety level for human consumption. Even then a proper measurement should be taken to maintain a healthy environment quality for future use.

ABSTRAK

Kajian ini bertujuan untuk menentukan tahap pencemaran najis akibat pembuangan bahan kumbahan ke dalam lagun Setiu dan juga menentukan sama ada tiram yang dikultur di lagun itu selamat untuk dimakan. Kerja persampelan dilakukan sebanyak tiga kali iaitu, pada 13th September 2006, 12th Oktober 2006 and 14th Disember 2006. Empat belas stesen persampelan dipilih di sekeliling lagun Setiu. "Multiple Test Tube Fermentation of Standard Method" digunakan untuk menentukan bilangan coliform, fecal coliform dan *E. coli* di dalam air, sedimen, dan tiram yang dikultur (*Crassostrea iredalei*) di lagun Setiu. Ujian GAD telah digunakan untuk mengesan kehadiran *E. coli* di dalam sample. Nilai purata untuk bilangan coliform, fecal coliform dan *E. coli* dalam air masing-masing ialah 652.88 MPN.100 mL^{-1}, 219.46 MPN.100 mL^{-1} and 22.07 MPN.100 mL^{-1}. Nilai purata untuk bilangan coliform, fecal coliform dan *E. coli* dalam sedimen masing-masing ialah 37.83 MPN.g^{-1}, 20.49 MPN.g^{-1} and 4.03 MPN.g^{-1} manakala bagi tiram yang dikultur di Setiu pula masing-masing 176.93 MPN.g^{-1}, 245.52 MPN.g^{-1} and 1.72 MPN.g^{-1}. Kehadiran total coliform, fecal coliform dan *E. coli* di dalam air dan sedimen menunjukkan bahawa lagun Setiu telah dicemari oleh bahan kumbahan. Kajian ini menunjukkan tahap fecal coliform di dalam lagun Setiu melebihi tahap keselamatan untuk aktiviti-aktiviti akuakultur tetapi tahap *E.coli* masih dalam tahap keselamatan untuk dimakan. Walaubagaimanapun langkah-langkah yang sewajarnya perlu diambil untuk mewujudkan persekitaran lagun dengan kualiti yang bersih bagi penggunaan masa depan.