

Z408 **Quantification of Reproductive Output in the Pacific Oyster, *Crassostrea gigas*, Using Immunological Method**

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Immunological methods provide both qualitative and quantitative information on antigenic molecules and are proven to be excellent tools for the study of animal reproduction. The present study reports development of oyster (*Crassostrea gigas*) egg protein specific antiserum and measurements of fecundity of female oysters using immunological assays. To develop the antiserum, oyster eggs were prepared following Choi et al. (1993), and biochemical composition such as proteins, lipids, carbohydrate was determined. A New Zealand white rabbit was immunized with oyster eggs extract over ten week period. Specificity of the antiserum was tested using immunodiffusion, immunofluorescence and indirect ELISA. Weight of the individual egg was estimated to be 12 ng. The eggs contained proteins 41%, lipids 25% and carbohydrate 11%. The rabbit anti-oyster egg IgG developed in this study initially exhibited a weak cross-reaction to other somatic tissues. Cross-reactivity was then removed using immunosorbent which was prepared by polymerization of glutaric dialdehyde with extract of a whole oyster collected in non-spawning season. After adsorption, the IgG exhibited a strong immunological reaction only to the oyster egg proteins. ELISA was used in quantification of oyster egg protein and reproductive output, percent weight of egg to the total tissue weight, was calculated as follows; total eggs in an oyster = oyster egg protein (mg/ml) determined from ELISA  $\times$  2.45 (ratio of total egg protein to total egg weight). Gonadal somatic index (GSI) was established in this study as the ratio of dry weight of oyster eggs to dry weight of total oyster tissue. Monthly mean GSI of female oysters collected from Kosung Bay was found to be the highest in mid-June ( $0.331 \pm 0.224$ ) when oysters are sexually mature and ready to spawn. Oyster egg protein could be detected as early as March when oyster contained early developing eggs. GSI was also varied with depth of the oyster lane; oysters near surface ripe earlier than the oysters located two to three meters below the surface. Immunological method used in this study was believed to be a method of choice for fast and sensitive technique to measure quantity of oyster eggs.