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**Cold Shock Proteins Induced from the Skin of  
*Bombina orientalis***

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In order to recognize the protein biosynthesis induced from the skin of *Bombina orientalis* under low temperature condition as a cold stress, SDS-PAGE using 10% polyacryamide gel was carried after cold treatment at 4°C. Protein bands induced under cold shock condition were found around the molecular weight of 88KDa, 66KDa, 45KDa, 30KDa and 20KDa. And among them 20KDa polypeptide was remarkable. When it was cultured under cold condition *in vitro*, cold shock proteins were synthesized in early times as 30min, 1hr, 2hrs but relatively long as 2-7hrs *in vivo* status. To the several organs in frog, observed the patterns of protein which were changed under normal and cold conditions. The molecular weight of major CSP(CSP20) was 20.6KDa. For the purification of CSP20, crude sample was collected and molecular cut-offed with centriprep, and finally chromatographed with the resins for ion-exchange and gel filtration.

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**Phenoloxidase System in the Haemolymph of *Spodoptera litura* Larvae**

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Phenoloxidase from the larval haemolymph of *Spodoptera litura* has been partially purified using gel filtration media, Ultrogel ACA34 and the activity has been determined using phenolic substrates. The enzyme catalysed the oxidation of other diphenols besides dopa but not the monophenol tyrosine, even in the presence of a catalytic amount of dopa. It was also found that incubation of haemolymph with acetone, certain alcohols, or with trypsin or  $\alpha$ -chymotrypsin served to induce enzyme activity. The enzyme has been localized in the 7% slab and disc PAGE as an intense band with high molecular weight. Other experiments included determination of the Michaelis constants for dopa, and determination of the effects of temperature and thermostability, and pH dependence on the phenoloxidase system. The enzyme is suggested to be involved in wound healing.