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Tissue Specific Expression of Two Lipophorin Receptor Variants in the Adult Mosquito

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We identified two splice variants of lipophorin receptor (LpR) gene products specific to the mosquito fat body (AaLpRfb) and ovary (AaLpRov) with respective molecular masses of 99.3 kDa and 128.9 kDa.Two mosquito LpR isoforms differ in their amino termini, the ligand-binding and O-linked sugar domains which are generated by differential splicing. PCR and Southern blot hybridization analyses show that these two transcripts originated from a single gene.

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cDNAs of Two Blue Pigment Binding Proteins from *Pieris rapae*

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We cloned and molecularly characterized two blue pigment binding protein (BPs) cDNAs from cabbage white butterfly, *Pieris rapae*. The BP cDNAs have a length of 522-bp coding for a 174-residue proteins with a predicted molecular masses of 18 kDa. Multiple alignment analysis of amino acid sequence revealed that BPs are most similar to bilin binding protein (BBP) from *Pieris brassicae* (94% identity) followed by BBP of *Galleria mellonella* (49.7% identity). The BP transcripts were detected by Northern blot analysis in almost all tissues with exception of ovary and at all developmental stages with exception of prepupal and early pupal stages.

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1,3-DCP (1,3-Dichloro-2-propanol) Induces Apoptosis Mediated with NF-kB in MCF-7 Cells

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Endocrine disrupting compounds (EDC's) are chemicals that either mimic endogenous hormones, interfere with pharmacokinetics or act by other mechanisms. Some endocrine disrupters were reported to be chemical substances that cause apoptosis in cells. 1,3-Dichloro-2-propanol (1,3-DCP) belongs to a group of chemical contaminants known as chloropropanols. A number of reports have indicated that 1,3-DCP may act as an endocrine disrupter and also has possible carcinogenic effects. The metabolism of 1,3-DCP was likely to produce the reactive epoxide intermediate that could damage DNA. In the present study,the apoptotic effect of 1,3-DCP was investigated using MCF-7 cells. We found that the reactive epoxide intermediates produced by 1,3-DCP induced apoptosis in dose- and time-dependent manner, which might be mediated through up-regulation of p53, NF-kB and Bax, down-regulation of p21 and Bcl-2. Our founding suggest that 1,3-DCP as one of endocrine disrupters can damage DNA and induce apoptosis in MCF-7 cells.

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A Gel Type Injectable Lipid-Polymer Complex for Local Insulin Delivery

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Subcutaneous injection of insulin is commonly used with diabetic patients to improve hypergycemia. However, because of inconvenience and frequent injection, other routes ofinsulin administration, such as polymer-based oral or dermal delivery, are being studied and developed. The objective of our work was to achieve local delivery of insulin using a lipid-polymer complex, a solid phase formulation that gives sustained release of insulin. Although this strategy is expected to keep blood glucose level steady with decreased injection frequency, some of the main requirements are to become a local gel-type formulation with biocompatibility and sustained drug release for a desired period of time. Comparing to the lipid-based formulation, lipid-polymer based formulation showed similar sustained release of insulin for 2-3 days when 50 U/kg concentration of insulin was employed and injected subcutaneously. On the other hand, the biocompatibility of this lipid-polymer-based formulation was better than the lipid-based formulation with lower inflammation.