Diacyl Choline Phosphoglyceride: The Endogenous Substrate for Energy Metabolism in Sea Urchin Spermatozoa

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ABSTRACT—Endogenous choline phosphoglycerides (CPG) are substrates for energy metabolism in the spermatozoa of the sea urchin, *Hemicentrotus pulcherrimus*. It has also been reported that alkenylacyl, alkylacyl and diacyl phosphoglycerides are distributed in sea urchin spermatozoa. This study was undertaken to determine whether CPG available for utilization in energy metabolism is a diacyl and/ or ether-containing compound. After incubation of spermatozoa in seawater, only the diacyl choline CPG content was found to have decreased significantly, and no changes were detectable in the other phospholipids. Analysis by gas-liquid chromatography indicated that 16 : 0, 18 : 0, 20 : 1, 20 : 4 and 20 : 5 at the 1-position and 20 : 4 and 20 : 5 at the 2-position of diacyl CPG had decreased during incubation. Phospholipase A_2 activity also had high substrate specificity for diacyl CPG. Thus it seems likely that sea urchin spermatozoa obtain energy throught the oxidation of diacyl CPG.

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