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ment of water from mother through the uterus is very low. The evidence indicates that embryonic wastes can be eliminated by the mother, but except for gas, there is no important chemical contribution to the embryo by the mother.

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The Distribution of Exogenous Inulin within Maternal and Fetal Body Fluids of the Dogfish, *Squalus acanthias*

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In the elasmobranch, *Squalus acanthias*, embryonic development is internal. This contrasts with the oviparous method of most lower vertebrates. The ovoviviparity occurs without placental specializations for obtaining nutrients from the mother. Preliminary observations were made in this study to determine whether the freely filterable and nonmetabolizable polysaccharide, inulin, could pass from the maternal blood stream to maternal uterine fluid and to fetal body fluids. Inulin is widely used in mammals for measuring extracellular fluid volume because it diffuses freely through capillary endothelium and is distributed uniformly throughout interstitial fluids. Despite its extensive vascularity, the dogfish uterus was found to be an effective barrier to the passage of inulin. Maternal plasma concentrations were maintained between 26 and 38 mg. per cent by repeated intramuscular injections over a ten day period. No significant quantities of inulin were detected in maternal uterine fluid or in pooled samples of fetal plasma, peritoneal or peridural fluids at the end of the injection period. Within the mother, inulin came approximately to equilibrium with plasma in peridural fluid, but did not enter pericardial or peritoneal fluids in significant amounts.

While the maternal uterus may serve in gaseous exchange, and in excretion by absorbing and carrying away those fetal wastes formed as the embryo develops at the expense of food materials within its yolk sac, it does not appear able to function as a nutritive organ in providing such freely filterable plasma constituents as inulin.

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