

**INOSITOL****Use**

Inositol deserves further investigation as a prophylactic nutritional supplement that can be used to reduce the severity of respiratory distress due to surfactant deficiency. Evidence that it may reduce the severity of retinopathy of prematurity also calls for more energetic study.

**Nutritional factors**

Myo-inositol (inositol), a six carbon sugar alcohol, is at least as abundant as glucose in the body. It is a precursor of various cell-membrane phospholipids. High levels potentiate the glucocorticoid induced acceleration of lung surfactant production. Breast milk and colostrum are rich in inositol, but artificial milk contains much less, and the fluids used to provide parenteral nutrition are totally deficient. Serum concentrations are high during fetal life, and later fall. Neonatal inositol levels rise when there is anuria, presumably because of reduced catabolism or excretion. There have been reports suggesting that some folate resistant neural tube defects may be prevented by inositol supplementation (at least in the laboratory mouse).

Serum levels of inositol rise after birth in babies fed breast milk, whereas in infants receiving parenteral nutrition they tend to fall. Inositol is well absorbed by mouth but can also be given intravenously. Two controlled trials conducted in Helsinki involving 295 babies in the 1980's suggested that ventilator-dependent babies of less than 2 kg offered oral or intravenous inositol supplementation require less mechanical ventilation, are less likely to suffer a pneumothorax, and are less likely to require long-term supplemental oxygen than placebo matched controls. Mortality is also reduced. In one trial there was also a reduced incidence of severe retinopathy of prematurity. Whether inositol is of any additional benefit in babies also offered exogenous surfactant, and whether early inositol supplementation can reduce the need for exogenous surfactant, remains to be established. Neither is it yet established whether inositol is of any measurable additional benefit when steroids have also been given antenatally. Plans for a further, much larger, trial of inositol were formulated some years later by neonatologists in Canada. These never came to fruition, but just such a trial has now been funded in the United States and pilot work on its design is nearly complete. For details contact Dale Phelps (Dale\_Phelps@URMC.Rochester.edu).

**Treatment**

In the larger of the two trials alluded to above, babies were given 80 mg/kg of inositol IV over 5 minutes twice a day for five days. In the earlier trial the healthier babies were given inositol by mouth. Treatment was suspended if there was anuria or evidence of renal failure. A second course was given after 2 weeks in those babies who were still largely parenterally fed.

**Supply**

No commercial preparation is currently available but material suitable for oral use could be obtained by the local pharmacy on request, and a sterile preparation suitable for IV use could be prepared on request at moderate cost (the ingredients would not cost as much as £1 per dose). There is nothing to stop its use on a "named patient" basis (as with other unlicensed drugs) but its use in the context of a clinical trial would require the prior issue of an exemption certificate by the Medicines Control Agency.

**References**

See the relevant Cochrane review ©

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