



The Placenta Is Capable of Compensating for Smoking-Induced Thiocyanate Inhibition of Its Iodide Symporter

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and cord-blood thyroglobulin levels. In mothers on moderate iodine supplementation, the thyroglobulin levels are lower than in mothers not receiving iodine supplementation, but the difference between

smokers and nonsmokers is still present. However, the ratio of serum thyroglobulin in a given mother and her child was not altered by smoking or by iodine supplementation.

ANALYSIS AND COMMENTARY ● ● ● ● ●

It is well known that thiocyanate inhibits NIS and that thyroidal autoregulation of its activity is able to compensate for this interference. In contrast, although the maternal breast also expresses NIS, there appears to be no autoregulation in this tissue, since the iodine content of maternal milk is decreased by increased thiocyanate serum levels. The placental iodide transport is closer to that of the thyroid: indeed, it is assumed that it is regulated, at least to some extent, by human chorionic gonadotropin (HCG) stimulation. In addition to NIS, the placenta possesses other transporters of iodide that are not blocked by thiocyanate. Yet there is still a lot of uncertainty in this field. In the present article, the authors show that despite smoking and moderate iodine deficiency the ratio between the maternal and fetal thyroglobulin levels is not altered. This finding is taken to indicate that the placenta can also adjust to the partial inhibition of NIS by thiocyanate.

In clinical medicine it is often difficult to prove a concept. The authors believe that placental autoregulation is evidenced by the absence of a change in thyroglobulin ratio between mother and child when there is exposure to thiocyanate. Yet other explanations cannot be excluded; for instance, under the influence of thiocyanate, maternal iodide concentrations could increase, compensating for the decreased iodide uptake by the placenta.

Since smoking during pregnancy is widely discouraged, it is likely that the prevalence of smoking by child-bearing women has greatly decreased. There are many reasons for this recommendation, such as the fact that other aspects of endocrine function are perturbed by smoking (2). In this respect it is interesting to note the finding by these authors that infants breast-fed by smoking mothers have a markedly decreased urinary iodine excretion, requiring a compensatory increase in thyroid function.

References

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2. Kapoor D, Jones TH. Smoking and hormones in health and endocrine disorders. *Eur J Endocrinol* 2005;152:491-9.