

DRUG INFORMATION

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SAFETY OF SELENIUM IN PREGNANCY

Question:

What is the safety of selenium in pregnancy? A patient is wishing to take a nutritional supplement containing selenium (200mcg) daily throughout pregnancy.

Answer:

There is little information describing the safety of selenium supplementation in pregnancy^[1-3]. Selenium has been associated with teratogenicity in humans and animals^[4].

Animal studies

Selenium supplementation has been associated with teratogenicity and embryonic death in birds^[4]. In mammals, the evidence for selenium toxicity is less clear. Some studies have failed to demonstrate a teratogenic effect while others have demonstrated teratogenic effects. In some of the studies that implicated selenium as a cause of teratogenicity, the maternal selenium dose was considered to be near-lethal doses^[4].

Human studies

The safety of selenium in human pregnancy is controversial^[4]. However, selenium has been associated with adverse pregnancy outcomes in humans^[5]. Robertson described eight female factory workers of childbearing age who were exposed to selenium via skin and inhalation in their normal course of work. Among these women there were four definite pregnancies and one probable pregnancy occurring in a five year period. Four of these ended in spontaneous abortion and the fifth infant who was born at term had bilateral club-foot. The authors speculated that other factors may be implicated in two of the four miscarriages. However, these women underwent urinalysis for selenium concentrations and were not found to have selenium concentrations significantly different from the local control population.

Willhite reviewed the available information on environmental exposure to selenium and foetal outcomes and reported that the few epidemiological studies available did not associate environmental selenium ingestion with teratogenicity^[4].

Selenium deficiency has been associated with some adverse foetal outcomes such as an association with first trimester miscarriage. Barrington *et al.*,^[6] determined the selenium concentrations in 36 women who had miscarried in the first trimester of pregnancy. These concentrations were found to be significantly lower than in women who were pregnant and in non-pregnant controls^[6]. The authors speculated that miscarriage may have occurred as a result of deficiency of selenium.

Recommended daily intake

The recommended daily intake of selenium for adult non-pregnant females is 55mcg in the United States and 60mcg in the United Kingdom. Maximum recommended safe intakes have been suggested by WHO to be 400mcg daily^[7].

Conclusions:

There is little information describing the safety of selenium supplementation in pregnancy and the literature is controversial. Therefore, we would advise against the use of high dose selenium supplementation in pregnancy as the benefits are unlikely to outweigh the potential risk of adverse outcomes.

References

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