

Vitamin D in human reproduction: the more, the better? An evidence-based critical appraisal.

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ABSTRACT

OBJECTIVE: Vitamin D is a fat-soluble secosteroid hormone that regulates calcium, magnesium, and phosphate homeostasis and plays a pivotal role as antiproliferative and immunomodulatory mediator. Considering the different sources of synthesis and dietary intake as well as the pleiotropic actions in extremely diverse (micro)environments of the body, the supplementation of this Vitamin should be carefully evaluated taking into account the several pathways that it regulates. In the current brief review, we aimed to summarize the available evidence about the topic, in order to suggest the best evidence-based supplementation strategy for human reproduction, avoiding the unuseful (and sometimes hazardous) empiric supplementation.

MATERIALS AND METHODS: Narrative overview, synthesizing the findings of literature retrieved from searches of computerized databases.

RESULTS: Accumulating evidence from in vitro fertilization (IVF) trials suggests that fertilization rate decreases significantly with increasing levels of 25OH-D in follicular fluid; in addition, Vitamin D levels in the follicular fluid are negatively correlated to the quality of embryos and the higher values of Vitamin D are associated with lower possibility to achieve pregnancy. Both low and high Vitamin D serum concentrations decrease not only spermatozoa count, but their progressive motility as well as increase morphological abnormalities. Finally, studies in animal models found that severe hypervitaminosis D can reduce the total skeletal calcium store in embryos and may compromise the postnatal survival.

CONCLUSIONS: Based on the retrieved data, we solicit to be extremely selective in deciding for Vitamin D supplementation, since its excess may play a detrimental role in fertility.