

Abstract

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Effects of Mild and Severe Vitamin B1 Deficiencies on the Meiotic Maturation of Mice Oocytes.

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OBJECTIVE AND METHODS: We investigated the effects of vitamin B₁ deficiency on the meiosis maturation of oocytes. Female Crl:CD1 (ICR) mice were fed a 20% casein diet (control group) or a vitamin B₁-free diet (test group).

RESULTS: The vitamin B₁ concentration in ovary was approximately 30% lower in the test group than in the control group. Oocyte meiosis was not affected by vitamin B₁ deficiency when the deficiency was not accompanied by body weight loss. On the contrary, frequency of abnormal oocyte was increased by vitamin B₁ deficiency when deficiency was accompanied by body weight loss (referred to as severe vitamin B₁ deficiency; frequency of abnormal oocyte, 13.8% vs 43.7%, $P = .0071$). The frequency of abnormal oocytes was decreased by refeeding of a vitamin B₁-containing diet (13.9% vs 22.9%, $P = .503$).

CONCLUSION: These results suggest that severe vitamin B₁ deficiency inhibited meiotic maturation of oocytes but did not damage immature oocytes.

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