

Abstract

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Behavioral perturbations in the vitamin K-deficient rat.

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BACKGROUND: Anecdotal observations of the behavior of rats with a vitamin K-deficiency suggested that this deficiency was associated with hypoactivity, general malaise, and a lack of exploratory behavior.

METHODS: These observations were pursued by assessing locomotor activity in a circular photocell-monitored track, open-field activity, and radial-arm maze performance in rats rendered vitamin K-deficient by dietary depletion or by warfarin treatment.

RESULTS: There was a significant reduction (approximately 25% at the median) in the locomotor activity of dietary vitamin K-deficient rats compared with rats fed a control diet. In the open-field, warfarin administration was associated with a significant shift from more exploratory behaviors to less exploratory behaviors. Consistent with these findings, radial-arm maze assessment showed a comparative reduction in locomotor activity in the dietary vitamin K-deficient rats with no alteration in performance, i.e., short-term memory.

CONCLUSION: These animal behavioral studies suggest that sub-clinical and clinical vitamin K-deficiency may contribute to physical and psychiatric symptomatology.

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