

DHEA and Brain Development

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Dehydroepiandrosterone (DHEA) treatment stimulates oxidative energy metabolism in the cerebral mitochondria from developing rats.

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Effects of treatment with dehydroepiandrosterone (DHEA) (0.2 or 1.0mg/kg body weight for 7 days) on oxidative energy metabolism in cerebral mitochondria from developing and young adult rats were examined. Treatment with DHEA did not change the body weight of developing rats but resulted in increase in the brain weight in 5 week group. In young adult rats the body weight increased following treatment with 1.0mg DHEA. State 3 and state 4 respiration rates with all the substrates increased following DHEA treatment, the effect being more pronounced in the developing rats. State 4 respiration rates were stimulated to variable extents. Contents of cytochromes aa(3) and b increased following DHEA treatment and once again the effect was more pronounced in the developing rats. DHEA treatment marginally changed the content of cytochromes c+c(1.) In the developing rats the ATPase activity and the levels of dehydrogenases increased significantly by DHEA treatment. Results of our studies have shown that treatment with exogenous DHEA accelerates the process of maturation of cerebral mitochondria thus emphasizing the role of DHEA in brain development in postnatal life.