EFFECT OF ASTAXANTHIN ON CORTICAL SPREADING DEPRESSION IN ETHANOL-TREATED ADULT RATS

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In the developing rat brain, ethanol intake has been shown to increase the propagation rate of cortical spreading depression (SD), a neural phenomenon present in several animal species. That effect could be attenuated by shrimp carotenoids. Here we have investigated the effects of astaxanthin, the main carotenoid found in shrimp (*Lithopenaeus vanamei)*, on SD. Adult Wistar rats received, during 18 days, per gavage, 2.5, 10 and 90 µg/kg/d astaxanthin dissolved in ethanol (3.8g/kg). These groups were compared with age-mated ones treated either with the vehicle (ethanol) or distilled water. Compared to the distilled water-group (mean values, in mm/min, per hour of recording ranging from 3.19±0.13 to 3.27±0.06; n=7), ethanol-treated rats displayed higher SD-velocities (from 4.08±0.09 to 4.12±0.16; n=7; $p<0.05$). Compared to the ethanol-group, astaxanthin-treatment dose-dependently lead to lower SD-velocities ($p<0.05$), ranging from 3.68±0.09 to 3.97±0.22, n=5 (for the 2.5 µg/kg/d-dosis); from 3.29±0.09 to 3.32±0.07; n=5 (10 µg/kg/d) and from 2.89±0.13 to 2.92±0.11, n=5, (90 µg/kg/d). Data suggest that astaxanthin could be the carotenoid responsible for such effect, since astaxanthin is the main carotenoid present in shrimp. Data also demonstrate that the adult brain is equally susceptible to that effect. Probably, the carotenoid antioxidant properties are involved in such effects.

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