Investigating the Developmental Effects of Anxiolytic Peptide Selank in Embryonic Danio rerio

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Benzodiazepines and antidepressants are used primarily in the treatment of anxiety, yet often come with negative side effects. Selank is an anxiolytic peptide approved for usage in Russia and Commonwealth of Independent States countries. Selank has been found to treat anxiety with a similar effectiveness as benzodiazepine class drugs. Unlike benzodiazepines, Selank's mechanism of increasing GABA comes with little to no side effects. Selank lacks dependence and withdrawals. In the experiment, the developmental effects of Selank on embryonic Danio rerio (Zebrafish) were examined. Zebrafish embryos 2 days post-fertilization were exposed to varying concentrations of Selank and compared with a control group. It was hypothesized Zebrafish embryos exposed to Selank would not have abnormal development. Embryos were examined after 5 days of Selank exposure for abnormal development. Embryo development was scored 5 to 0.5 for individual morphological structures. A score of 5 indicated normal development. Scores decreasing from 5 indicated increasingly abnormal development. A score of 0.5 indicated the lack of a morphological structure. A significant lack of abnormal development was found across all Selank concentrations. An Equivalence (TOST) test was performed to determine significance. Both one sided tests gave a p-value less than 0.001, meaning Selank concentration groups were statistically equivalent. The Teratogenic Index of Selank was calculated to be 0. Future research should model Selank safety in higher order organisms, such as rodents. Additionally, future research should examine the long term safety of Selank. If evidence continues to support Selank's safety and effectiveness, future research should aim to refine Selank's role in anxiety treatment.

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