

Do Prenatal Vitamins Inhibit Cell Growth? The Effects of Butylated hydroxyanisole and Butylated hydroxytoluene on Blastemal Cell Growth and Development

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Butylated hydroxyanisole (BHA) and Butylated hydroxytoluene are synthetic phenolic antioxidants used ubiquitously in products including foods, pharmaceuticals, and cosmetics. Recent evaluations of safety assessments and intake evaluations reveal conflicting results and major inadequacies in methodology. The purpose of this study was to provide clarity on the effects of BHA and BHT on blastemal cell growth and development via a *Dugesia tigrina*. BHA and BHT were introduced to *D. tigrina* through manipulation of their feeding protocol. Feeding mixes were prepared using varying concentrations of the compounds in chicken liver. The concentration groups were fed on day 1 and day 3 of the experimental window. On day 4 *D. tigrina* were transversely amputated. *D. tigrina* has an average epimorphosis period of seven days and therefore on day 9 and day 11 the length of the regenerative blastemas were measured using the program Infinity Analyze 2. All BHT concentration groups died within the first 4 days of the experimental window. This is thought to be due to the hazards of BHT metabolites. However, the total lengths of regenerative blastema and growth rates between BHA concentration groups were analyzed using the single-factor ANOVA followed by Tukey-Kramer procedure. Data revealed that increasing amounts of BHA decreased the total growth of blastemal cells and promoted the early onset of cell differentiation. In conclusion, the ubiquitous presence of BHA and BHT and the practice of additive-free labelling backed by the results of this study support the suggestion for expectant mothers to avoid using BHA and BHT.