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| Abstract: | Amino acids, as the fundamental constituents of life, intricately contribute to various biological processes, notably protein synthesis. This study examined the impact of amino acid supplementation at a concentration of 10 mM on Caenorhabditis elegans survival when exposed to the pathogenic bacterium Pseudomonas aeruginosa. In addition, the study also evaluated the toxicity of different amino acids in C. elegans. While a spectrum of amino acids exhibited varying effects, some demonstrating toxicity even at minute concentrations, others remained non-toxic up to 200 mM. Notably, at 10 mM concentration, individual amino acids displayed no discernible impact on overall worm survival, barring Tryptophan (Trp), which manifested a distinct phenotypic response. Supplementation of 10 mM Trp notably impeded C. elegans egg hatching. Surprisingly, this toxicity was mitigated by adding diverse monosaccharides. Furthermore, the modulation of Trp toxicity was observed with different bacterial diets. This study elucidates that the impact of amino acids on innate immunity is complex, and there is no direct relationship between immunity and aging. Further investigations are necessary to unravel the intricate interplay between Trp metabolism and cellular physiology. |
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