Bombyx mori Antimicrobial Peptides: A Novel and Sustainable Catalyst for Cancer Cell Growth Inhibition and Death

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Antimicrobial peptides are short-chain proteins known for their antibacterial, antimicrobial, and antiviral properties. Each peptide has varying properties, though they have largely been tested only for antimicrobial properties—its potential in cancer research has yet to be explored. In this study, the effect of two such antimicrobial peptides on cancer cells is investigated. Lebocin and Cecropin, derived from Bombyx mori (silk moth), were tested on MDA-MB-231 cancer cells. For Lebocin, 20 μM, 35 μM, and 50 μM concentrations were tested, while Cecropin A was applied at 35 μM. The wells were counted and imaged every 24 hours. Statistical significance was calculated using independent and paired t-tests. The cells treated with Lebocin continued to proliferate as would be expected of uninhibited cancer cells, showing no inhibition of cancer cell growth or cell death. In contrast, Cecropin A caused significant cell death—cell numbers halved by 48 hours and remained low throughout the trial. It is thus suggested that Lebocin's surface-level poration methods are not as effective at inhibiting cancer cells as Cecropin A's internal organelle disruption, even though they bind to surface factors in the same way. As future studies derive optimal concentrations for the application of Cecropin A, the results of this study provide a stepping stone in the analysis or discovery of novel anticancer factors related to antimicrobial peptides. Cecropin A also has the potential to be a useful additive or foundation for a sustainably extracted cancer treatment. Eco-friendly, quick-acting cancer treatments may just revolutionize patient-centric healthcare systems everywhere.

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