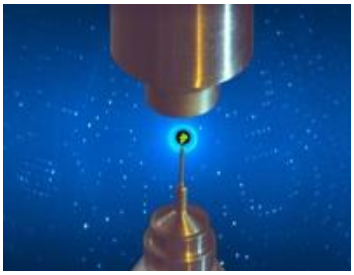

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Elucidating Melittin selectivity using complex cell membrane models

Wednesday, 9 June 2021 14:40 (20 minutes)

Cancer is one of the major threats to our health on a global scale. In order to battle these diseases while maintaining the quality of life for patients it is important to find anticancer drugs with a high selectivity for the target cancer cell. Melittin, a peptide found in Honey bee venom has long been known for its antimicrobial effects. Later studies have also shown Melittin to be effective against several types of cancer cells and recently it was discovered that it can selectively target aggressive forms of breast cancer over healthy cells. Melittin act by binding to the lipid membrane that surround the cells. Our approach is to study Melittin's interaction with specific lipid components in models of cancer cell membranes in order to understand the peptide's selectivity for cancer cells over the healthy cell of the body. We do this by a combination of neutron scattering and computer simulation techniques. Developing new methods for extracting and purifying deuterated lipids from cell cultures enables us to tailor the cell membrane lipid composition to specifically probe the differences in Melittin's interaction with models of cancer cells and healthy cells. Combining the experimental results with computational simulations, we aim to obtain a detailed picture of how different lipids influence Melittin' s selectivity and potency against cancer cell membranes.

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