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Melting Behaviour of Cell Death Lipids[1] SHERRY LEUNG, Simon Fraser University, JESUS SOT, FELIX GONI, Universidad de País Vasco, JENIFER THEWALT, Simon Fraser University — Sphingomyelin is a major lipid constituent of mammalian cell plasma membranes. It is converted into ceramide during programmed cell death. It is hypothesized that this conversion induces a structural change in membranes that is responsible for downstream signaling. To characterize these structural changes, deuterium nuclear magnetic resonance spectroscopy is used to create a concentration-temperature phase diagram of palmitoyl sphingomyelin:ceramide multilamellar vesicles in excess water between 0-40 mol% ceramide and 25-80°C. The two lipids are fully miscible at high temperatures and at 40 mol% ceramide. A variety of solid-liquid coexistence phase behavior is observed at lower concentrations. With increasing ceramide content, a gel phase is observed at progressively higher temperatures, implying that at physiological temperature, ceramide may increase the gel phase propensity of cell membranes.

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