Efficient mass spectrometry of neuropeptides using C18-patterned substrates

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We developed an efficient method for simultaneous up-concentration and desalting of neuropeptides for mass analysis. Researchers have studied cell-to-cell signaling peptides (SPs) using various analytical methods. SPs have been known to have important role in the physiological mechanisms. Currently available approaches for analyzing peptides have drawbacks such as loss of peptides and complicated steps for sample preparation. Our approach is to use C18-Au coated patterned substrate. When peptide solution with high salt content is dropped onto the patterned C18-Au surrounded by donut-shaped hydrophilic anchors, salts are removed by outward flow generated during evaporation, while peptides are collected onto the central C18-Au region. Our approach greatly simplifies the sample preparation for matrix-assisted laser desorption/ionization mass spectrometry (MALDI-MS). Using this approach we demonstrate mass analysis of neuropeptides secreted from live neurons of sea slug *Aplysia*.