

Title: Self-dividing micelles: A mechanistic look With evolutionary and clinical implications

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Micellar therapy has become a usefully viable treatment arm in various fields, ranging from oncology to bioimaging. As such, research leading to any improvements or adaptations in administration and techniques can have far-reaching consequences. Potential aspects of prebiotic chemistry may also be explored in such research as well. To that end, proof-of-concept experiments were performed to elucidate a possible mechanism of action for prebiotic protocell division. Representative potentially prebiotically plausible biomolecules, i.e., a fatty acid, amino acid, and nucleotide were mixed and heated in water and subjected to microscopic examination for observation of possible self-division and laboratory testing for the presence of polypeptides and polynucleotides (Biuret, MALDI mass-spec, etc.) with and without the presence of nucleotide. The results are presented here and a mechanism is proposed that best fits the data obtained. The evolutionary, e.g., prebiotic biomolecular cooperativity, and clinical, e.g., potential antineoplastic micellar/vesicular therapy, ramifications are discussed as well.