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BIOFUNCTIONALIZED COMPLEX COACERVATE CORE MICELLES

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Complex coacervate core micelles (C_3Ms) are self-assembling colloids formed when a positively charged polymer (polycation) complexes with a negatively charged polymer (polyanion). The micelles are stabilized by an uncharged hydrophilic polymer that is covalently linked to one or to both of the charged polymers. The resulting structure of a C_3M consists of a dense core of the polycation-polyanion complex surrounded by a corona of the hydrophilic neutral polymer chains.

The core of a C_3M, having a diameter of typically a few tens of nanometers, may be used to accommodate functional ingredients, *i.e.*, drugs, nutraceuticals, DNA fragments, enzymes, *etcetera*. There, they may be protected from external (*e.g.* enzymatic or immunogenic) attack. For instance, we have recently shown that proteins can actively participate as one of the charged building blocks to form the core of the micelle. Moreover, by coupling specific receptor molecules (such as streptavidin, immunoglobulins, DNA fragments, ….) to the corona, the C_3Ms may be addressed to a desired location by biological recognition interactions. Thus, C_3Ms have great potential as carriers for controlled targeting and delivery of functional ingredients.