

Formation of Photo-protective Colloidosomes Using Synthetic Melanin Nanospheres

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Colloidosomes are microcapsules, so called Pickering emulsions which were stabilized with nanoparticles surrounding the interface of two immiscible phases. So far, various colloidosomes have been prepared with conventional solid nanoparticles however, it is yet to be reported to use melanin nanospheres which block UV light to protect living bodies. Here, we created photo-protective microcapsules containing photo-vulnerable substances such as fluorescent materials or cells. Synthetic melanin nanospheres dispersed in an oil phase adsorbed on the surface of water droplets and formed microshells while breaking emulsions with a vortex mixer. The efficiency of UV protection in an ambient light was studied through fluorescent intensity change of the fluorescein isothiocyanate tagged dextran. Moreover, viability of yeast cells encapsulated in microcapsules was examined to confirm synthetic melanin colloidosomes functioning as proper microcontainers against UV light.