

Interaction between Carbon dots from folic acid and their cellular receptor: the first qualitative spectroscopic approach.

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Folic acid receptor (FA-R), a membrane-bound protein on the cell surface, is overexpressed in many pathologic conditions such as cancer. Folic acid, its natural ligand, has successfully been used as cargo to selectively deliver drugs to cells overexpressing such a receptor demonstrating the high tolerability of this vitamin for structural modifications.

Carbon dots obtained from folic acid, as a source of carbon, have recently been used to selectively image cells overexpressing FA-R through a hypothesized interaction between these nanoparticles and the receptor.

Using fluorescence emission spectroscopy, a powerful method to sense molecular interactions, we demonstrated here the ability of these Carbon dots to selectively interact with Folate Binding Protein, a soluble form of FA-R with high affinity for folic acid, and reinforce the idea of considering these nanoparticles as a useful platform for drug delivery.