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Strategies to enhance the bioavailability of curcumin: a potential antitumor drug ABHISHEK KUMAR, JOSHNA CHITTIGORI, University of Massachusetts Lowell, LIAN LI, LYNNE SAMUELSON, U.S. Army Natick Soldier Research, Development & Engineering Center, DANIEL SANDMAN, JAYANT KUMAR, University of Massachusetts Lowell — Curcumin is a polyphenol which has elicited considerable interest for its antioxidant and anti tumor properties. Although curcumin may be used as potential therapeutic drug, it is very sparingly soluble in water which makes it less bioavailable under physiological conditions. We report two approaches to make curcumin more bioavailable. The first approach involves fabricating colloidal dispersions of curcumin in the range of tens of nanometers. The second approach involves functionalization of curcumin with polyethylene glycol (PEG) to render it water dispersible or soluble. Since curcumin is a fluorescent molecule as well as a potential drug, its interactions with cells have been investigated using one and two photon confocal fluorescence imaging. We have also observed strong interaction between curcumin and metal ions, which may have physiological implications.

Abhishek Kumar
University of Massachusetts Lowell

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