COX-2 specific probe for tumor growth inhibition and photodynamic therapy

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Abstract: Cyclooxygenase-2 (COX-2) plays important role in oncogenesis. This enzyme is overexpressed in some cancers such as pancreatic, lung, breast, colon, and prostate cancers. Over the past decade, in vitro, preclinical, and clinical data have supported COX inhibitors can reduce the occurrence of cancers and pre-cancerous growths. Indomethacin is one of COX inhibitors with anti-inflammatory and analgesic properties. It is approved for NSAID (non-steroidal anti-inflammatory) drug. Here, we report cancer treatment efficacy of the indomethacin covalently linked with a new class of photosensitizer, aza-BODIPY (BD-COX2), in breast cancer cells. This probe showed growth inhibition in cancer cells by indomethacin part and effective tumor abolition by photodynamic therapy.

Keywords: Aza-BODIPY; Photodynamic therapy; COX-2 inhibitor; Cancer treatment; Tumor targeting