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(54) Title: ALKYL-TPP COMPOUNDS FOR MITOCHONDRIA TARGETING AND ANTI-CANCER TREATMENTS

(57) Abstract: Alkyl-triphenylphosphonium compounds having a saturated, linear alkyl chain of about 9 to about 18 carbons may be used as therapeutic agents to treat cancer. Demonstrative compound dodecyl-TPP (d-TPP) dose-dependently inhibits the propagation of breast cancer stem cells and targets the adherent "bulk" of cancer cells, by decreasing MCF-7 cell viability. Further, d-TPP potently inhibits mitochondrial oxygen consumption rate, while simultaneously shifting cell metabolism toward the glycolytic pathway. This shift to a strict metabolic dependency on glycolysis may be used to eradicate the residual glycolytic CSC population, by using additional metabolic stressors. For example, d-TPP may be combined with a glycolytic inhibitor or an OXPHOS inhibitor, through co-administration or sequential administration, to treat cancer and eradicate CSCs.



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