

Use of Cucurbitacins and Withanolides for the Treatment of Cancer

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Collaborative Research Opportunity:

The National Cancer Institute's Laboratory of Experimental Immunology, Cancer Inflammation Program is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize the use of cucurbitacins or withanolides in combination with pro-apoptotic agonists of TRAIL death receptors for cancer therapy.

Technology:

Certain members of the cucurbitacin and Withanolide family have been identified that can sensitize some tumor cell lines to cell death (apoptosis) on subsequent exposure of the cells to pro-apoptotic receptor agonists (PARAS) of the TRAIL "death receptors". These PARAS include TRAIL itself, and agonist antibodies to two of its receptors death receptor-4 (DR4 or TRAIL-R1) and death receptor 5 (DR5, TRAIL-R2).

The protein TRAIL has a very interesting characteristic that it can preferentially cause death of cancer cells whereas normal non-transformed cells are unaffected. Thus use of TRAIL or agonist antibodies to its so-called "death receptors" has been a current focus in cancer therapy.

Applications:

- Use of the compounds with known TRAIL or agonist antibodies such as Mapatumumab or in combination with immunotherapeutic approaches for the treatment of cancer.

Development Status: Pre-clinical, *in vivo* studies are ongoing

Publication:

NL Booth et al. A cell-based high-throughput screen to identify synergistic TRAIL sensitizers. *Cancer Immunol Immunother.* 2009 Aug;58(8):1229-1244. [[PubMed: 19089423](#)]

Patent Status:

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