Researchers at the University of South Florida have developed a method of inhibiting NF-kB activity in a cell using a naturally occurring human gene termed POP2 (pyrin-only protein-2).

Biological growth is regulated by a plethora of processes including cell growth, cell death and various cell signaling mechanisms. Further, NF-kB is an important regulatory protein complex with control over many functions including cell growth, cell-cycle regulation, and cell survival. However, mutations, chromosomal rearrangements and chronic inflammation can erroneously activate NF-kB. Cancer cells, which are known for their infinite replication abilities and malicious growth rates, typically report high NF-kB activity. Currently, many widely used chemotherapy agents unintentionally activate NF-kB, thus lessening the effectiveness of the agent as well as desensitizing the tumor. Studies have shown that combining a chemotherapy agent with an NF-kB inhibitor can remove this unintentional effect and restore the agent’s efficacy. This highlights the need for a drug that can halt NF-kB activity in compromised cells to stop disease progression.

USF researchers have identified a naturally occurring POP2 protein which inhibits NF-kB activity. Also claimed are polypeptides and nucleic acids which encode POP2, and methods for their production and use. POP2 is expected to have a greater efficacy and exhibit fewer side effects than current NF-kB protein modulating drugs because it is a naturally occurring NF-kB inhibitor. This technology is useful in the treatment of cancer, as well as for autoimmune and inflammatory diseases.

**ADVANTAGES:**
- Specific inhibition of NF-kB
- Improved chemotherapy effectiveness
- Potential lessening of side effects
- Applicable for the treatment of many diseases

**A Naturally Occurring Protein that Inhibits NF-kB Activity in a Cell**

**A Computer Generated Model of the POP2 Protein**

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