Curcumin as a Treatment for Pancreatitis
Tech ID: 20519 / UC Case 2002-427-0

BACKGROUND

Pancreatitis is a severe disease that is associated with high morbidity and mortality. It is typically caused by alcohol abuse or gallstones and most patients suffering from pancreatitis require hospitalization. No therapies are available to treat the illness; only palliative care is available. Current research has implicated the inflammatory response as playing a critical role in the development of pancreatitis. Inflammation results from the up-regulation of a multitude of pro-inflammatory signaling molecules including TNF-α, IL-6, IL-8 and others. Activation of the inflammatory pathway in the pancreas is thought to damage pancreatic tissue, thereby leading to the disease. Thus a therapeutic for the treatment of pancreatitis would have to target multiple pro-inflammatory molecules.

INNOVATION

Curcumin is a naturally occurring substance found in the root of Curcuma longa that gives curry dishes their distinctive yellow color. Researchers at UCLA have identified a novel use for this compound in the treatment of pancreatitis. In a rat model of pancreatitis, curcumin decreased the level of several markers that are typically used to diagnose the disease including serum lipase and amylase concentrations, neutrophil accumulation and trypsin activation. Synthetic curcumin derivatives were also tested, some of which were found to be more potent than curcumin itself. Further investigation revealed that curcumin attenuated the expression of several pro-inflammatory cytokines including TNF-α, IL-6 and IL-8. This was shown to occur through the inhibition of the transcription factors NF-κB and AP-1, which positively regulate these cytokines. These inhibitory effects of curcumin were augmented by inhibitors of reactive oxygen species (ROS). Since this inflammatory pathway is involved in other diseases it is possible that curcumin can have multiple therapeutic uses.

APPLICATIONS

- Curcumin may be used to treat pancreatitis.
- Curcumin can be used as a preventative measure for pancreatitis.
- Curcumin may have beneficial effects for other inflammatory diseases including arthritis, inflammatory bowel disease, nephritis, hepatitis, encephalitis, and possibly Alzheimer’s disease.

ADVANTAGES

- Curcumin inhibits the actual disease process leading to pancreatitis rather than merely masking its effects.
- Curcumin is non-toxic.
- Curcumin is a naturally occurring compound that can be derivatized to identify more potent compounds.
- Curcumin derivatives in combination with ROS-inhibitors can yield augmented beneficial effects.

RELATED MATERIALS


PATENT STATUS

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