Preservation of tissues in vivo and in vitro

Published date: Aug. 16, 2012

Technology description

These small peptide molecules protect cells from death in conditions that normally stress and kill them. These non-toxic, membrane permeable molecules related to Ku70 work through the Bax pathway very early in apoptosis prior to caspase activation. Therapeutic uses include minimizing tissue damage associated with transplantation, stroke, cancer, heart attack and neurological injury. Both in vivo and in vitro models show therapeutic utility. In rats, Bax peptide therapy prevented retinal degeneration after optic nerve injury. Mice with acute liver failure given monkey hepatocytes cultured with peptide had prolonged survival and better outcomes after liver transplant. Peptide blocks apoptosis in vitro in a very broad range of tissue types. Issued patent 7,314,866 Divisionals and continuations in prosecution

Application area

Therapeutic molecule to prevent long term tissue damage after injury
Media additive to prolong solid organ or cellular viability in transplantation
Blocks binding of bacterial and viral pathogens at the cell surface
To prevent cell death in non-cancerous tissues as a result of radiation or chemotherapy

Advantages

Inventor Shigemi Matsuyama, Ph.D. has demonstrated efficacy and activity across multiple species and various stresses that causes Bax-mediated cell death including apoptosis, necrotic and autophagic cell death. Bax peptides more effective in blocking programmed cell death than the pan-caspase inhibitor z-VAD-fmk without the associated toxicity.

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