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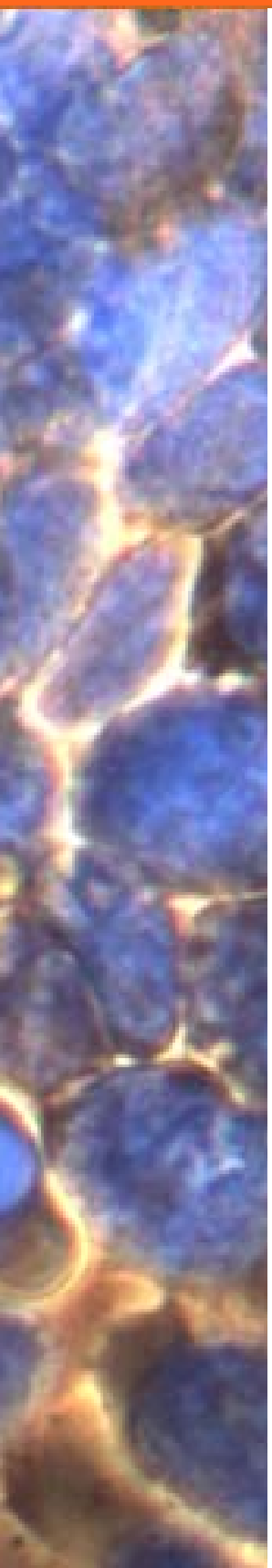
Blood Research Institute

Apoptosis preventing peptides



In Brief

A membrane permeable peptide that inhibits Bax-mediated apoptosis. Potential uses in minimizing tissue damage in transplantation, stroke, cancer, heart attack and injury.

Description

These small peptides are non-toxic, related to Ku-70 and work through the Bax pathway, very early in apoptosis prior to caspase activation. Both *in vitro* and *in vivo* models show therapeutic utility. In rats, Bax-suppressing 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.

These peptides could potentially be used to:

- Prevent long term tissue damage after injury
- As a media additive to prolong solid organ or cellular viability in transplantation
- Block binding of bacterial and viral pathogens at the cell surface
- Prevent cell death in non-cancerous tissues exposed to radiation or chemotherapy

Benefits

Bax peptides are more effective in blocking programmed cell death than the widely used pan-caspase inhibitor z-VAD-fmk, without the associated toxicity.

Patent protection

US7314866B2 Ku-70 derived Bax-suppressing peptides and use thereof for the protection of damaged cells

US8183342B2 Method of treating chemotherapy-induced thrombocytopenia

US9458427B2 IFNɣR2 compositions and methods of inhibiting neuronal cell death

Publications

Ma C, Pan Y, Yang Z, Meng Z, Sun R, Wang T, Fei Y, Fan W. Pre-administration of BAX-inhibiting peptides decrease the loss of the nigral dopaminergic neurons in rats. *Life Sci.* 2016;144:113–120.

Sun M-Y, Cui K-J, Yu M-M, Zhang H, Peng X-L, Jiang H. Bax inhibiting peptide reduces apoptosis in neonatal rat hypoxic-ischemic brain damage. *Int J Clin Exp Pathol.* 2015;8:14701–14708.

Tanaka K, Kobayashi N, Gutierrez AS, Rivas-Carrillo JD, Navarro-Alvarez N, Chen Y, Narushima M, Miki A, Okitsu T, Noguchi H, Tanaka N. Prolonged survival of mice with acute liver failure with transplantation of monkey hepatocytes cultured with an antiapoptotic pentapeptide V5. *Transplantation.* 2006;81:427–437.

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