

Peptide inhibitor of Bcl-xL antiapoptotic activity

DESCRIPTION OF THE TECHNOLOGY

The growth of cancer cells occurs because the mechanisms that control programmed cell death (apoptosis) are altered, leading to "uncontrolled" division of these cells.

The Bcl-xL protein (B-cell lymphoma-extra large) is a protein of the Bcl-2 family inserted in the mitochondrial membrane, with anti-apoptotic activity, i.e. it inhibits cell death. It has been observed that many types of cancer show abnormal activity of this protein that prevents cell death. In addition, Bcl-xL has other relevant functions in various forms of cancer, such as melanoma, where it is involved in the induction of drug resistance, cell migration and invasion, and angiogenesis.

Given the function of this protein, finding an effective inhibitor that targets it would provide a promising tool in the fight against cancer. However, none of the Bcl-xL inhibitors designed to date have been successful, either due to lack of efficacy or high toxicity.

Researchers from the University of Valencia and the Weizmann Institute of Science in Israel have developed a polypeptide, called D1, which blocks the interactions of the transmembrane region of Bcl-xL, preventing its function. This peptide is directed against a hitherto unexplored region of the protein and therefore has a completely different mechanism of action to any of the inhibitors designed to date.

Different experiments with cancer-derived cells, including cervical cancer cells, have demonstrated the effectiveness of the D1 peptide in blocking the action of Bcl-xL. Furthermore, it has been shown that treatment with D1 peptide, without the addition of any other apoptosis-inducing compound, does not produce cell death or damage, thus demonstrating the absence of D1 toxicity. This absence of toxicity makes it a good candidate as an antitumor agent.

MARKET APPLICATION SECTORS

The technology could be applied as a treatment for different types of cancer in combination with other apoptosis-inducing compounds. Application as an adjuvant treatment and in the development of personalized cancer therapies.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

This peptide solves the problems of current BclxL inhibitors, presenting the following advantages:

- - Treatment for a wide range of cancer types.
- - High efficacy with absence of toxicity.
- - Increased effectiveness and decreased side effects in combination with other drugs.
- - Decreased resistance to other antitumor drugs.

CURRENT STATE OF DEVELOPMENT

The technology has been validated at laboratory level.

INTELLECTUAL PROPERTY RIGHTS

The technology is protected through Spanish patent application P202230029, entitled " Inhibidores de la actividad antiapoptótica de Bcl-xL y su uso en el tratamiento de cáncer " and priority date 17/01/2022 nad by its patent family.

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COLABORATION SOUGHT

- User license agreement.
- Subcontracting agreement with companies and/or institutions.

RELATED IMAGES

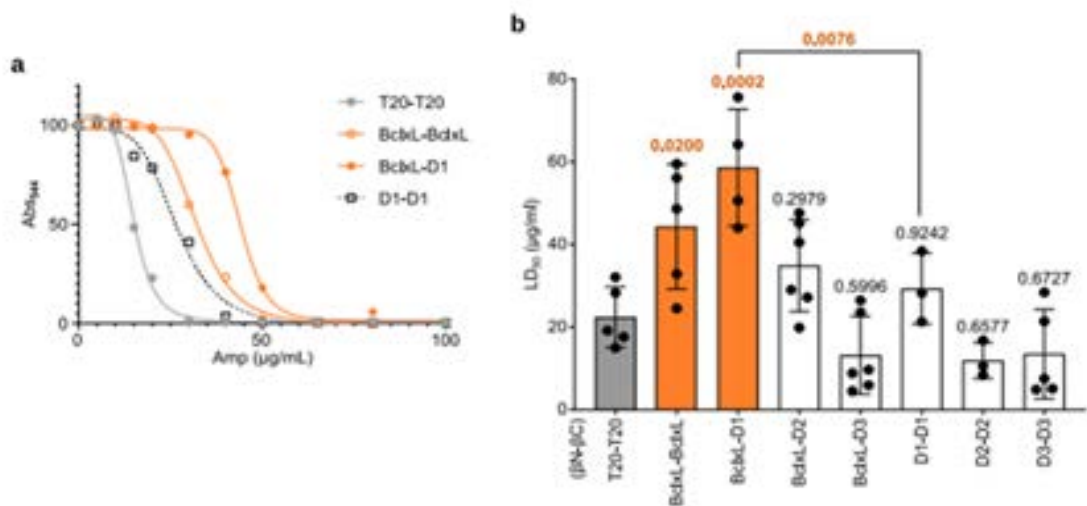


Figure 1: Interaction between BclxL TMD and D1 inhibitor.

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