Institut Hospital del Mar d'Investigacions Mèdiques

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A TREATMENT FOR TRIPLE NEGATIVE BREAST CANCER

The present invention relates to a new use of zonisamide for use in the treatment breast cancer, in particular triple negative breast cancer tumours.

An offer for Patent Licensing and/or R+D collaboration

ZONISAMIDE FOR THE TREATMENT OF BREAST CANCER

Breast cancer traditionally has been classified into three different subtypes based on the presence or absence of three receptors found on cancer cells. Hormone receptor (HR) positive breast cancers express estrogen and/or progesterone receptors (ER/PR), and constitute approximately 60% of all breast cancer cases. The oncogene human epidermal growth factor receptor 2 (HER-2/neu) is over-expressed in approximately 20% of all breast cancer cases; while approximately 20% of breast cancer cases are negative for the expression of ER, PR, and HER-2/neu, also known as triple negative breast cancer.

Triple negative breast cancers are typically associated with poor prognosis, due to aggressive tumor phenotype(s), only partial response to chemotherapy and present lack of clinically established targeted therapies and represent the focus of increasing interest at the clinical, biological and epidemiological level, as disclosed in Podo *et al*., Triple-negative breast cancer: Present challenges and new perspectives, Mol. Oncol., 2010, 4, 209-229.

There is, thus, a particular need for new active agents suitable for breast cancer treatment, and in particular for triple negative breast cancers.

Main advantages and applications

The zonisamide inhibits the LOXL2-enzymatic activity, and consequently opens a therapeutic window for the treatment of breast cancer, in particular triple negative breast cancer.

Zonisamide inhibits *in vitro* the enzymatic activity of human recombinant LOXL2 enzyme, and that such inhibition decreases the proliferative capacity of breast cancer cells *in vivo* and causes cell death. Breast cancer triple negative cells with high LOXL2 levels died after 4 days of zonisamide treatment.

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