乳癌に発見する新規薬物トランスポーター・下乳癌抗癌薬transporter 1 (hBCCT1) の機能解析

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We attempted to identify factors predicting the effectiveness of anticancer drug Paclitaxel. To search for a novel organic solvent transport protein, we screened a human breast cancer cDNA library using an EST clone as a probe. To determine the functional characterization of the isolated transporter, we employed a Xenopus laevis oocyte expression system. After multiple rounds of screening, we isolated fifteen positive clones, and isolated a novel gene encoding human breast cancer transporter 1 (hBCCT1), from a human breast cancer cDNA library. Isolated hBCCT1 cDNA consisted of 1,581 base pairs that encoded a 327-amino acid protein. By RT-PCR analysis, hBCCT1 mRNA was detected in the normal breast and the breast cancer tissues. When expressed in X. oocytes, hBCCT1 mediated the high affinity transport of 3H]Paclitaxel in time- and pH-dependent, and Na-independent manners. Immunohistochemical analysis revealed that the hBCCT1 protein is localized in the lactiferous duct epithelium and breast cancer.

A newly isolated hBCCT1 is a key molecule for the breast handling of Paclitaxel in humans, and a predictor of the therapeutic effect of Paclitaxel.

Keywords: transporter, Paclitaxel

Thymidylate synthase copy number as a predictive biomarker for pemetrexed sensitivity in lung cancer

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Thymidylate synthase (TS) is a key molecule for the breast handling of Paclitaxel (Pct). Pemetrexed (PEPT1) is a new anticancer drug and the first in the family of thymidylate synthase inhibitors. This study shows that possibility of prediction of response to chemotherapy for esophageal cancer by Paclitaxel-sensitive drug resistance is significant.

Keywords: Thymidylate synthase, Pemetrexed

Drugs sensitivity test and prediction (2)

Chairperson: Tohru Obata (Aichi Gakuen Univ.)

Prediction of response to chemotherapy for esophageal cancer by anti-p53 antibody


The density of p53-antibody-positive cells was evaluated in esophageal cancer patients. The correlation between the density of p53-antibody-positive cells and the response to chemotherapy was evaluated. The results showed that the density of p53-antibody-positive cells was significantly higher in non-responders than in responders.

Keywords: p53 antibody, chemotherapy

Molecular mechanism underlying ALA-PDT resistance in human cancer cells


ALA-PDT is widely accepted as a novel therapeutic strategy for cancers. However, a number of patients fail to respond to ALA-PDT. We investigated the molecular mechanism underlying ALA-PDT resistance in human cancer cells.

Keywords: ALA-PDT, Cancer cells