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# Drug resistance in luminal breast tumors: Results of a novel in vitro breast cancer chemoresistance platform

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**Objective:** The aim of our preliminary study was to validate a novel *in vitro* chemoresistance platform to predict the response of luminal tumors to cytotoxic drugs commonly used in neoadjuvant settings. **Methodology:** Patients with estrogen receptor (ER)-positive breast cancer tumors who underwent upfront surgery were included. Fresh tumor samples were collected during surgery and dissociated to obtain the tumor cells. The tumor cells were cultured in the chemoresistance platform with anthracyclines and taxanes, and after 72 h, cell viability was evaluated. The test result is defined based on cell viability as low (<40%), medium (40%–60%), and high (>60%) resistance. One BC cell line (MCF-7 (luminal)) was used to confirm the response to the drugs. **Results:** Samples from 13 patients diagnosed with ER+/HER positive and/or negative undergoing upfront surgery were tested in the chemoresistance platform. Nine (69.2%) patients presented luminal A tumors, 2 (15.4%) luminal B, and 2 (15.4%) luminal B/HER2. The chemoresistance platform demonstrated that samples presented higher resistance to taxanes compared with anthracyclines. In taxanes, 75% presented high resistance to docetaxel and 61.6% to paclitaxel, and in anthracyclines, only 15%, and 8.3% presented high resistance to doxorubicin and epirubicin, respectively. To confirm these differences in drug response, we evaluated the cell survival rate of an ER-positive cell lineage (MCF-7) after the treatment with the same drugs using the IC50 (50% inhibitory concentration). In accordance with our previous results, we observed lower rates of high resistance to doxorubicin (34%) and epirubicin (37%) and higher rates using paclitaxel (58%) and docetaxel (67%). **Conclusion:** This preliminary finding highlighted the technique success of the *in vitro* chemoresistance platform and suggested a possible role of intrinsic resistance in the worse response to neochemotherapy of patients with luminal tumors.

**Keywords:** breast neoplasms; drug therapy; taxanes; anthracyclines; drug resistance.