

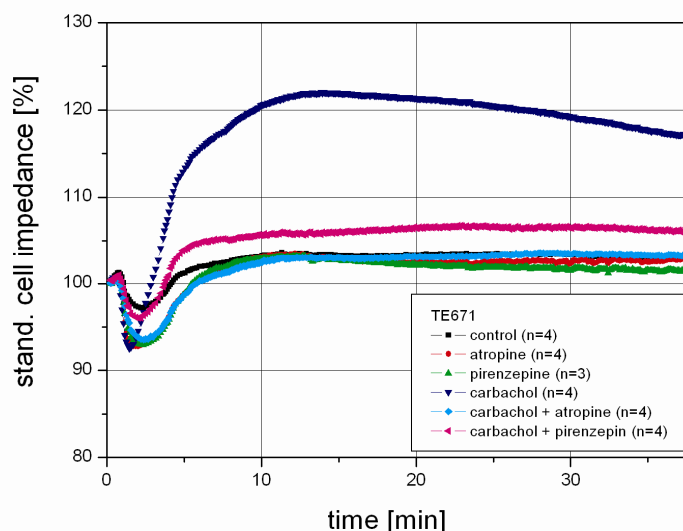
Impedance-based cellular analysis

Monitoring of native G_q receptor-coupled activation and inhibition by impedance measurement

INTRODUCTION

The characterization of receptors in their functional environment is an important tool in drug discovery especially with GPCRs as a target. In this application note, the online monitoring of the muscarinic acetylcholine receptor (mAChR) of TE671 cells with the **Bionas Discovery™ adcon reader** is described. Cellular reactions are assessed by electrical impedance measurement. At the bottom of each well interdigitated electrodes are integrated to monitor the electrical impedance changes due to cell morphology. The results show the profiles of carbachol-induced native receptor activation and the antagonistic action of atropine and pirenzepine.

RESULTS



TE671 cells were treated with 10 μM carbachol to activate G_q -coupled mAChR response. Atropine and pirenzepine (both 5 μM) treatment inhibited the carbachol-induced GPCR response measured with the **Bionas Discovery™ adcon reader**. The addition of inhibitors alone did not induce a change of impedance signals.

MATERIALS & METHODS

GPCR assay. TE671 cells were seeded into the **Bionas Discovery™ adcon reader** and cultured for 24h before carbachol was added. Antagonists were pre-incubated for 15 min before the addition of agonist.

Analysis in the Bionas Discovery™ adcon reader. Prior to the experiment, the plate station was placed inside an incubator and connected with the external analyzer. The impedance was measured by applying an alternative voltage to the electrodes at a fixed frequency of 10 kHz. Values for the impedance for each sensor/well were recorded every 16 sec. After acquisition, the data were visualized in real-time and analyzed with the **Bionas Discovery™ adcon software**.

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