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Poster Sessions

Effects of 12 compounds on field potential signals with xCELLigence CardioECR system using iCell cardiomyocyte²

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Human iPSC cardiomyocytes (hiPS-CMs) have been used for the risk assessment of drug-induced QT prolongation and ventricular tachycardia called torsade de pointes. We have evaluated 12 compounds using CardioECR. The 12 compounds include high (azimilide, bepridil, dofetilide, ibutilide), intermediate (chlorpromazine, cisapride, clarithromycin, clozapine) and low (diltiazem, loratidine, metoprolol, mexiletine) risk classes. The effects of these compounds on field potential (FP) and impedance signals were evaluated with iCell cardiomyocytes². In the high risk group, azimilide, dofetilide and ibutilide prolonged the field potential duration (FPD) and induced EADs, but bepridil stopped the beating at the highest concentration. In low risk group compounds, diltiazem, metoprolol and mexiletine stopped beating, and loratidine showed no apparent change in FPD. The intermediate compounds stopped beating or induced EADs at higher concentrations. These results suggested that CardioECR can be used as a platform to assess the QT risk with hiPS-CMs. As CardioECR can utilize the impedance data in addition to the FP signals, an integrated analysis using both signals is useful for more accurate interpretation of compound nature.