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# Equilibrium a nd K inet ic Mea sureme nt s of

**M usca rinic Rece pt or Anta gonism on Living Ce lls U sing Bea d I nject ion Spect rosc opy**

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**Bead injection spectroscopy (BIS) techniques are intro- duced for automated measurement of pharmacological antagonism by functional assay. Chinese hamster ovary cells that express the rat type 1 muscarinic receptor are cultured on microbeads and used as a renewable biologi- cal target for muscarinic receptor antagonist ligands. A flow injection instrument is used to reproducibly sample and capture the cells in a jet ring chamber. The effect of the antagonist pirenzepine on the carbachol-induced intracellular calcium response of the cells is measured with a fluorescence microscope photometry system. The BIS functional assay is used to quantify both equilibrium and kinetic pharmacological values for pirenzepine. In addition, two muscarinic receptor antagonists (piren- zepine and atropine) are assayed to compare their relative efficacy at diminishing the calcium response. Due to the precision of the automated fluid/bead handling protocols, and reproducibility of the measured calcium response, the quantification of useful pharmacological information from living cells by BIS techniques is demonstrated.**

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phase in a specialized detector flow cell (e.g., a jet ring (JR) chamber), perfuse the captured solid phase with sample or reagent,