IN VITRO PHARMACOLOGY

Cerep

TISSUE ASSAYS

Tissue bioassays are functional assays designed to evaluate the agonist and antagonist activities of compounds at various receptors and ion channels in whole tissues. The tissues used are isolated from contractile cardiac and smooth muscles of the cardiovascular, respiratory, gastrointestinal and urogenital tracts of rodents, rabbit or human. The selected tissues are assayed in organ bath systems to record the contractile activity in conditions as selective as possible to avoid any potential interaction with other receptors known to be present in the tissue used.

NON-PEPTIDE RECEPTORS

Family/assay	Ref.
ADENOSINE	
T A_1	0294
T A_{2A}	0295
T A_{2B}	0783
ADRENERGIC	
T $alpha_1$ (non-selective)	0296
T $alpha_2$ (non-selective)	0297
T $beta_1$	H 0298
T $beta_2$	0299
T $beta_3$	0300
CANNABINOID	
T CB_1	0307
DOPAMINE	
T D_1	0309
T D_2	0310
GABA	
T $GABA_A$	0314
T $GABA_B$	0315
HISTAMINE	
T H_1	0316
T H_2	0317
MUSCARINIC	
T M_1	0318
T M_2	0319
T M_3	0320
PURINERGIC	
T P2X	0332
SEROTONIN	
T 5-HT_{2A}	0334
T 5-HT_{2B}	0333
T 5-HT_3	0335
T 5-HT_4	0336
SIGMA	
T sigma (non-selective)	0337

PEPTIDE RECEPTORS

Family/assay	Ref.
ANGIOTENSIN II	
T AT_1	0301
BOMBESIN	
T BB_1	0303
BRADYKININ	
T B_1	H 0935
T B_1	0304
T B_2	H 0623
T B_2	0305
CALCITONIN GENE-RELATED PEPTIDE	
T CGRP	0306
CHOLECYSTOKININ	
T CCK_1 (CCK_A)	0308
ENDOTHELIN	
T ET_A	0311
T ET_B	0312
NEUROKININ	
T NK_1	0321
T NK_1	0624
T NK_2	0322
T NK_3	0323
T NK_3	0625
NEUROPEPTIDE Y	
T Y_1	0324
T Y_2	0325
T Y_3	0326
NEUROTENSIN	
T NT (non-selective)	0327
OPIOID AND OPIOID-LIKE	
T $delta_2$ (DOP)	0328
T kappa (KOP)	0329
T mu (MOP)	0330
T NOP (ORL1)	1226
VASOACTIVE INTESTINAL PEPTIDE	
T $VPAC_2$ (VIP_2)	0622
VASOPRESSIN	
T OT	0331
T V_{1a}	0338

ION CHANNELS

Family/assay	Ref.
VOLTAGE-GATED CHANNELS	
Ca^{2+} channels	
T L	0339
K^+ channels	
T K_{ATP}	0340
MEMBRANE LIGAND-GATED CHANNELS	
GABA	
T $GABA_A$	0314
Purinergic	
T P2X	0332
Serotonin	
T 5-HT_3	0335

NON-KINASE ENZYMES

Family/assay	Ref.
PROTEASES	
Metalloproteases	
T ACE	0302
T ECE-1	0313

T tissue assay H human

TESTING CONDITIONS

SUGGESTED TESTING

Qualitative screening

- Assessment of both agonism and antagonism at 3 concentrations in duplicate (2 tissues)
- Suggested test concentrations: 1, 3 and 10 times the IC_{50}/K_i binding value

Catalog prices correspond to this combination.

Follow-up testing for quantitative determination of pharmacological parameters

- EC_{50}/pD_2 values of agonists at 6-8 concentrations in duplicate
- IC_{50} values of antagonists at 6-8 concentrations in duplicate
- pA_2 or pD'_2 values of antagonists at 3 concentrations, each at least in triplicate

Prices upon request.

SAMPLE SIZE (including IC_{50} follow-up studies)

For screening at 3 concentrations in duplicate (2 tissues) or follow-up: sufficient amount to prepare 150 µL of a 1000-fold concentrated solution relative to the highest test concentration for each assay.

Maximum tolerable final DMSO concentration: 0.1%.

PROTOCOL

- **Agonism/antagonism assessment**

  The agonist activity is evaluated by exposing the tissues to increasing concentrations of the compounds. Where an agonist-like response is obtained, the reference antagonist is tested against the highest test concentration to confirm the involvement of the receptor studied in this response. A reference full agonist is used as a positive control.

  The antagonist activity is evaluated by testing increasing concentrations of the compounds against a single concentration of the reference agonist. A reference antagonist is used as a positive control.

- **EC_{50}/pD_2 values for agonists, IC_{50} values for antagonists and maximum responses (Emax)**

  Same protocols as above, with full concentration response curves.

- **pA_2 or pD'_2 values for antagonists**

  Concentration-response curves to the reference full agonist are obtained in the absence (control) and in the presence of a fixed concentration of the compound. The resulting changes in the agonist curves are used to determine a pA_2 value for competitive antagonism (decrease in the pD_2 value of the agonist) or a pD'_2 value for non-competitive antagonism (decrease in the maximum response to the agonist).

▶ ANY OF OUR ASSAY PROTOCOLS CAN BE CUSTOMIZED: PLEASE INQUIRE

DELIVERABLES

Mean percent of control values, EC_{50}/pD_2, IC_{50}, pA_2 or pD'_2 values.
Concentration-response curves.

DATA TURNAROUND

Complete data set is typically available 4 weeks after receipt of the compound at the testing site.

ASSAY CATALOG REFERENCES

In 2009, Cerep finalized one of the milestones in the industrialization process: the implementation of new referencing and supply chain management systems. The references of each of the assays have thus been simplified: **each reference will now be displayed as 4 digits.**

A correlation table between old and new assay references is available at **www.cerep.com** CATALOG ONLINE <http://www.cerep.com/Cerep/Users/pages/Catalog/Assay/catalog.asp>

QUESTIONS OR CONCERNS?

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