Pharmacological Data Acquisition and Analysis

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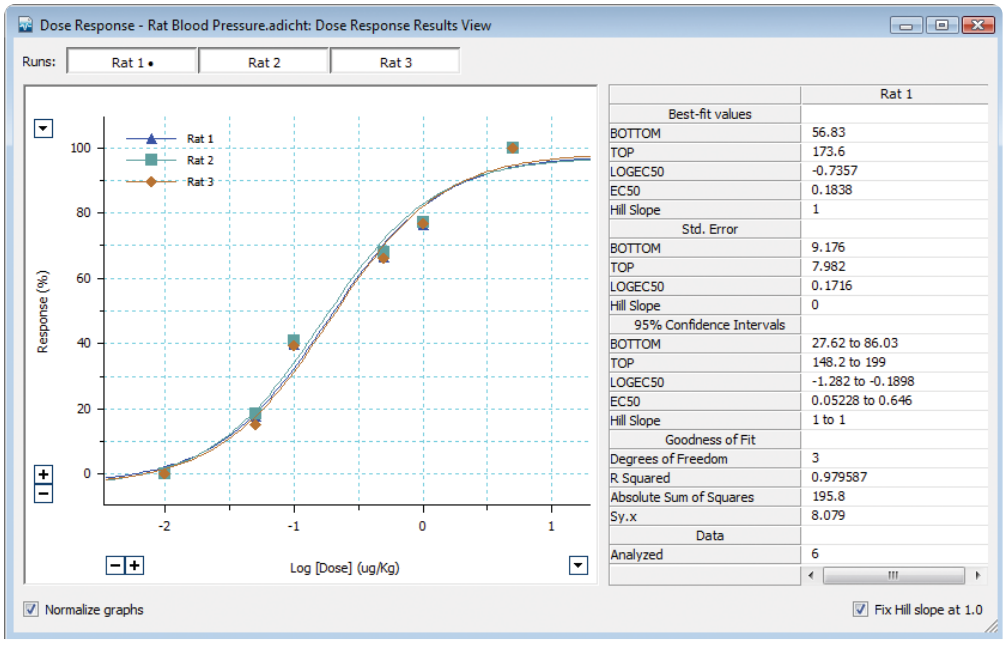
Dose Response Module for LabChart® and PowerLab®



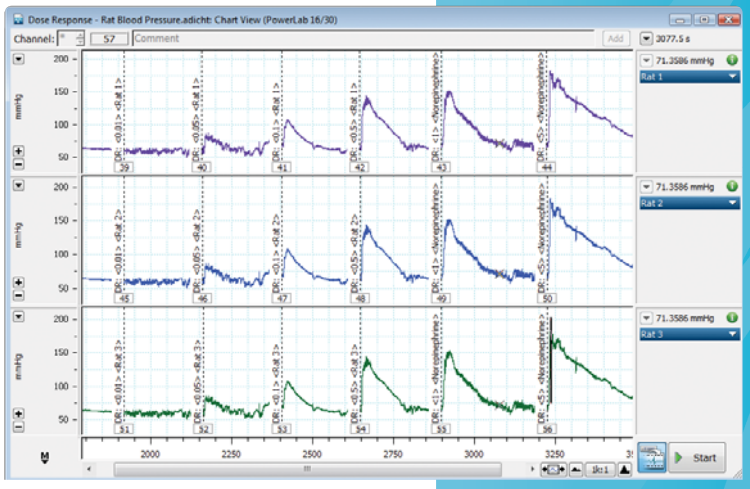
	Rat 1
Best-fit values	
BOTTOM	56.83
TOP	173.6
LOGEC50	-0.7357
EC50	0.1838
Hill Slope	1
Std. Error	
BOTTOM	9.176
TOP	7.982
LOGEC50	0.1716
Hill Slope	0
95% Confidence Intervals	
BOTTOM	27.62 to 86.03
TOP	148.2 to 199
LOGEC50	-1.282 to -0.1898
EC50	0.05228 to 0.646
Hill Slope	1 to 1
Goodness of Fit	
Degrees of Freedom	3
R Squared	0.979587
Absolute Sum of Squares	195.8
Sy.x	8.079
Data	
Analyzed	6

Dose Response Module Results View showing fitted response curves to increasing doses of norepinephrine in rat blood pressure recordings (see recording below). Fitting parameters for a selected curve are shown on the right.

ADInstruments PowerLab data acquisition systems with the Dose Response Module provide flexible and straightforward tools for investigating physiological or biochemical responses to stressors. Easily and rapidly assess muscle contraction, enzyme activity, membrane potential, hormone secretion, heart rate and blood pressure responses to chemical, electrical or physical agonistic and antagonistic agents.

Provided with the PowerLab unit, LabChart software is an intuitive interface for controlling hardware and transducers, data acquisition and display options, and automating repetitive procedures (such as channel calculations). In addition to displaying and recording the data, the LabChart Dose Response Module provides numerous display, calculation and analysis features to expedite results.

The Dose Response Module can be used to analyze data in real time or used offline with previously recorded data. The module identifies response markers in the LabChart recording and uses the selected data to generate dose response curves and calculated values such as EC_{50} and Hill Slopes.



Below: Recording of rat aortic blood pressure. The agonist injection points were marked during recording. Data were digitally filtered to remove the individual beats to show only the average pressure per beat.

Features & Benefits

- For *in vivo* and *in vitro* dose response applications
- Manual or automatic dose response curve calculation modes
- Display of single or multiple response curves
- For studies including:
  - muscle contraction
  - enzyme activity
  - hormone secretion
  - blood pressure
  - heart rate
  - membrane potential
- Online and offline analysis

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LabChart and Dose Response Module

The Dose Response Module for LabChart is configured for *in vivo* and *in vitro* studies and allows real time and offline analyses. It is ideal for assessment of response to measured stimulation by chemical, electrical or physical agents in experiments involving:

- Isolated tissue muscle contraction
- Enzyme activity
- Hormone secretion
- Heart rate
- Blood pressure
- Membrane potential

Dose Response windows

Table View – Provides centralized setup, display and data management functionality.

Analysis View – Allows inspection and adjustment of calculation region and optional baseline for each response.

Results View – Displays fitted sigmoid curve parameters and allows simultaneous display of multiple curves with optionally fixed top, bottom and hill-slopes.

Flexible workflow

Simply enter a dose or list of doses and mark dose point/s on the data trace. From there, auto-analyze data or manually calculate responses using custom algorithms.

The Table, Analysis, Results and Chart Views are linked for swift and uncomplicated navigation to data points of interest.

Analysis

Single or multiple dose response curves can be calculated automatically or manually, with optional flat or sloping baselines.

Automatically generate Hill Slopes, as well as determining:

- EC_{50} (and S.E.)
- Average response
- Maximum response
- Maximum-Minimum (response height)
- Response integral (area)
- Minimum response

Analyses are automatically tabulated in the Dose Response Table View, which can be exported for use in other applications. Saved LabChart files can be shared and viewed using the free LabChart Reader.

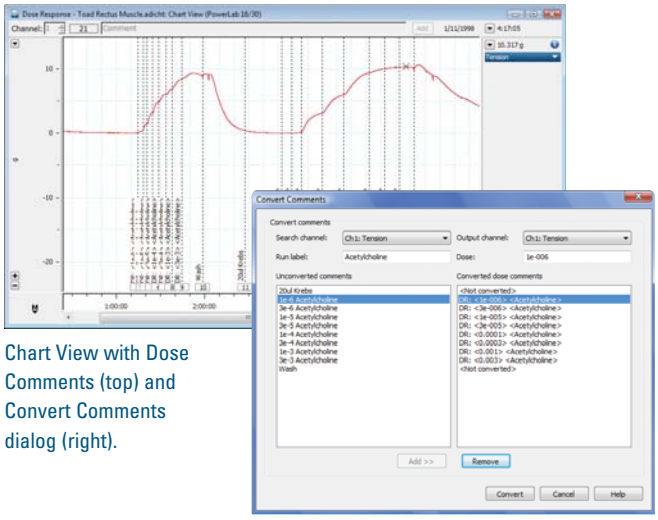


Chart View with Dose Comments (top) and Convert Comments dialog (right).

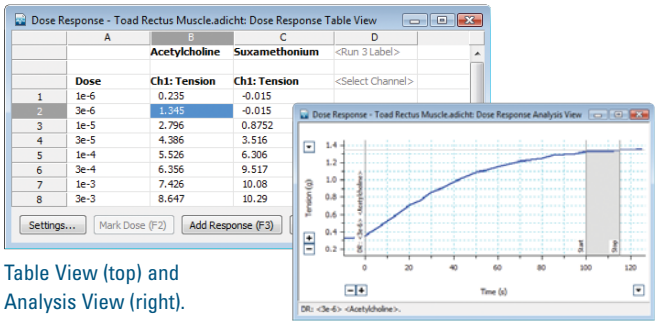
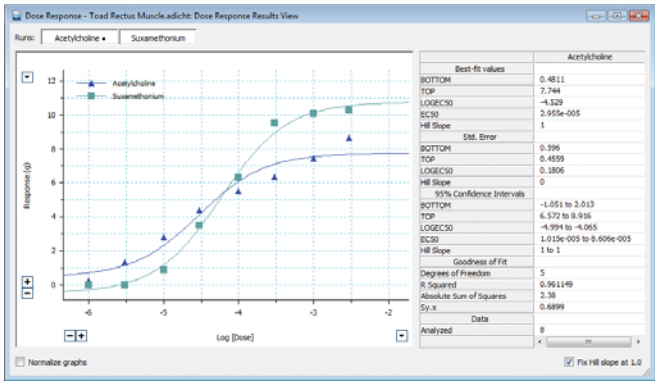
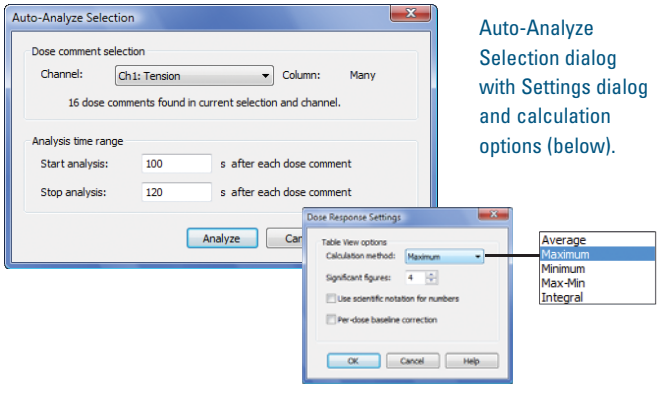


Table View (top) and Analysis View (right).



Results View with calculated parameters.



Auto-Analyze Selection dialog with Settings dialog and calculation options (below).

Customized or preconfigured solutions

The PowerLab advantage

The powerful acquisition and analysis features of ADInstruments research products are suited for a wide range of physiological, pharmacological and neurophysiological applications. Whether it's a ready-to-use research system or a completely customized package, our state-of-the-art equipment and software will fast track your research to publication.

Complete research systems

PowerLab data acquisition units provide 16-bit resolution on all gain ranges, hardware filters that eliminate environmental interference, and sampling speeds of up to 200 kHz per channel. In combination with LabChart software, PowerLab seamlessly detects and converts up to 32 analog signals to digital data in user-determined units. A PowerLab data acquisition unit with LabChart Pro software is supplied with ADInstruments research systems.

Organ Bath Systems

Water-jacketed systems are available in modular or "all-in-one" compact models, ideal for pharmacokinetic studies. Provided with isometric transducers; compatible isotonic transducers and stimulating electrodes are available separately.

Wire Myograph Systems

These are ideal for *in vitro* studies of smooth muscle function in small tubular tissues (>60 µm). Systems for larger vessels and strip preparations are available. LabChart Pro modules for rapid, uncomplicated experiment optimization are included.

Cardiovascular Pressure and Pressure Volume Systems

Millar Pressure Volume Systems are compatible with state-of-the-art Mikro-Tip® catheters, ideal for acquiring high-fidelity cardiovascular and excretory pressure/pressure-volume signals directly at the source.

Working Heart/Langendorff Systems

Our systems include specialized glassware, data acquisition equipment, amplifiers, transducers and accessories for working and Langendorff heart applications. LabChart Pro is supplied for fast analysis of cardiac pressure and biopotentials, flow, temperature etc.

Ordering information

For a detailed list of system components and other available systems please visit www.ADInstruments.com

PowerLab Data Acquisition Units		
PL3504 PowerLab 4/35	PL3508 PowerLab 8/35	PL3516 PowerLab 16/35
/P PowerLab units are supplied with LabChart Pro software including the Dose Response Module		

Compact Organ Bath Systems		
PL3508B5/C 4 Chamber System	PL3508B6/C 8 Chamber System	PL3516B7/C 16 Chamber System
Systems include a PowerLab 8/35, LabChart Pro, Bridge Amps, Force Transducers and Multi-Chamber Organ Bath		

Tissue/Organ Bath Systems		
PL3508B60/C-V Radnoti 4 Chamber Tissue-Organ Bath System	PL3508B61/C-V Radnoti 8 Chamber Tissue-Organ Bath System	PL3516B62/C-V Radnoti 16 Chamber Tissue-Organ Bath System
Systems include a PowerLab 8/35, LabChart Pro, Bridge Amps, Force Transducers and Multi-Chamber Organ Bath, Thermo Bath/Circulator		

Wire Myograph Systems	
PL3508B22 Dual Wire Myograph System	PL3508B24 Multi-Chamber Wire Myograph System
Systems include a PowerLab 8/35 and a DMT Wire Myograph	

Pressure Systems	Pressure–Volume Systems
PL3508B35 Mikro-Tip BP Foundation System†	PL3516B46 MPVS-Ultra Foundation System*

†Pressure catheters are purchased separately
*Pressure-Volume catheters are purchased separately. For more information or assistance please contact your nearest ADInstruments representative.

Working Heart Systems	
PL3508B55-V Radnoti Working Heart System for Mice	PL3508B50/X-V Radnoti Working Heart System for Rats/Rabbits
Systems include a PowerLab 8/35, Bridge Amps, Pressure Transducers, T-type Pod, Thermocouple Probe, Animal Bio Amp, Spring Clip Electrodes and Radnoti Working Heart System	

Langendorff System	
PL3508B2-V Langendorff System for mice (constant pressure or flow)	System includes a PowerLab 8/35, Langendorff apparatus, with Thermostat controller, Peristaltic Pump, STH Pump Controller, Bridge Amps, Physiological Pressure Transducers, Animal Bio Amp and accessories

Software

MLS060/7 LabChart		MLS330/7 GLP Client and MLS335 GLP Server			
MLS260/7 LabChart Pro	(Includes the modules listed below. Modules are also available for individual purchase.)				
MLS390/7 Dose Response	(Win)	MLS310/7 Heart Rate Variability	(Win and Mac)	MLS340/7 Cardiac Output	(Win)
MLS065/7 DMT Normalization	(Win and Mac)	MLS240/7 Metabolic	(Win and Mac)	MLS320/7 Video Capture	(Win and Mac)
MLS370/7 Blood Pressure	(Win)	MLS062/7 Spike Histogram	(Win and Mac)	MLS395/7 Circadian Analysis	(Win)
MLS360/7 ECG Analysis	(Win)	MLS380/7 Peak Analysis	(Win)	MLS375/7 PV Loop	(Win)

Showcase your data. LabChart Reader – download to view LabChart data free.

PowerLab systems and signal conditioners meet the European EMC directive. ADInstruments signal conditioners for human use are approved to the IEC60601-1 patient safety standard and meet the CSA C22.2 No. 601.1-M90 and UL Std No. 2601-1 safety of medical electrical equipment standards.

GLP 21CFR Part11 Compliance

ADINSTRUMENTS.com ISO 9001:2008 Certified Quality Management System

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