STRENDA Guidelines Level 1B

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as approved on 24th August 2010

The STRENDA Commission (Standards for Reporting Enzymology Data) compiled the following Guidelines, as a service to the community, to define the minimum amount of information that should accompany any published enzyme activity data.

The Commission was founded in 2003 and is supported by the Beilstein-Institut since then. Members of the Commission are: R.N. Armstrong† (*Vanderbilt University, Nashville, TN, USA*), A. Bairoch (*University of Geneva, Switzerland*), Barbara M. Bakker (*University Medical Center Groningen, The Netherlands*), A. Cornish-Bowden (*CNRS-BIP, Marseilles, France*), P. Fitzgerald *(The University of Texas Health Science Center, San Antonio, TX, USA),* P. Halling (*University of Strathclyde, Glasgow, UK*), T.S. Leyh (*The Albert Einstein College of Medicine, Bronx, NY, USA*), C. O'Donovan (*EBI, Cambridge, UK*), F. Raushel (*Texas A&M University, College Station, TX, USA*), J. Rohwer (*University of Stellenbosch, South Africa*), D. Schomburg (*Technical University of Braunschweig, Germany*), N. Swainston (*The University of Manchester, UK*), M.-D. Tsai (*Academia Sinica, Taipeh, Taiwan*), K. Tipton (*Trinity College, Dublin, Ireland*) and C. Kettner (co-ordination, *Beilstein-Institut, Frankfurt, Germany*).

The current checklists (list level 1A and level 1B) were reviewed on a STRENDA meeting in August 2010 in terms of consistency of form and content, as well as of the order and plausibility of the list entries. After slight modifications both lists were approved by the participants and declared as „completed“.

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defines those data that are required to allow a quality check on the data and to ensure their value to others. In principle, this is the minimum information to describe enzyme activity data.

Information required	Comments
Required data for all enzyme functional data	
Number of independent experiments	any problems of reproducibility should be stated
Precision of measurement	*e.g. standard error of the mean, standard deviation, confidence limits, quartiles*
Specification whether relative to subunit or oligomeric form	

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Information required	Comments
Data necessary for reporting kinetic parameters	units necessary:
k_{cat}	V_{max} may be divided by the specific activity units, measured in s^{-1} or min^{-1}
V_{max}	V_{max} given as units, as defined in List 1A,
k_{cat}/K_m	k_{cat}/K_m given as concentration per time, *e.g.* $mM^{-1}\ s^{-1}$
K_m	units or concentration necessary, *e.g.* mM
$S_{0.5}$	concentrations, *e.g.* mM
Hill coefficient, saturation ratio (R_S) or other coefficients of cooperativity	
How was the given parameter obtained?	e.g. non-linear curve fitting using least squares, non-parametric method such as direct linear plot, linear regression to transformed form of rate equation **Note:** if commercial computer programs are used, determine which were used.
Model used to determine the parameters	with explanation of why is the chosen model considered to be the "right" model
High-substrate inhibition, if observed, with K_i value	
Data required for reporting inhibition data	
Time-dependence and reversibility	with method described
Inhibition types:	K_i units necessary
reversible	*e.g.* competitive, uncompetitive, etc., with units and how values were determined
tight-binding	association/dissociation rates

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Information required	Comments
irreversible	*e.g.*, non-specific, mechanism-based, "suicide substrate". There are too many alternative parameters to list here. The reference to a quite comprehensive source is recommended: Enzymes:Irreversible Inhibition. Tipton, K.F. In: Nature Encyclopedia of Life Sciences London, (2001). http://www.els.net/ [doi:10.1038/npg.els.0000601] **NOTE:** IC_{50}values These have been used for both reversible or irreversible inhibition. However the use is not recommended because these values are without a consistent meaning. The relationship of these values to inhibition constants is analysed in detail e.g. by Cortes, A. *et al.* (2001) *Biochem. J.* **357**:263-268.
Data required for reporting activation data	similar to the requirements for inhibition data