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# INSTRUCTIONS TO AUTHORS

With effect from June 2006

## *General Guidelines*

### Types of articles published

The *British Journal of Pharmacology* (BJP) welcomes contributions in all fields of experimental pharmacology, including studies on normal human subjects. The work should have a direct bearing on drugs and their actions. Papers describing the discovery and characteristics of new chemically defined compounds are welcomed. Studies describing biochemical, physiological or pathophysiological mechanisms with no clearly stated link to drug effects or their mechanisms are unsuitable for BJP. BJP does not publish reports of undefined natural extracts on tissues, clinical trials, or other pharmacological studies on patients.

BJP publishes **Full Papers, Review Articles, Commentaries and Correspondence**. Please note that BJP no longer publishes Special Reports.

Reviews and Commentaries are normally commissioned by the journal, but consideration will be given to unsolicited contributions.

**Full papers** should normally be based on new experimental results, and must constitute a significant contribution to pharmacological knowledge. Papers that reassess pharmacological concepts based on earlier results will also be considered, as well as purely theoretical papers. Papers describing new methods in pharmacology are also welcome, but must embody new principles rather than minor technical modifications.

**Reviews**, normally 5000–8000 words, should present an update of recent developments in an active field, rather than a comprehensive historical overview. Authors of unsolicited review articles should submit a title and outline to the Reviews Editor for approval in principle.

**Commentaries**, normally less than 1000 words, are intended to put into context the material presented in a particular paper. BJP editors normally commission commentaries on papers in press, but unsolicited commentaries on recent papers published in BJP or elsewhere will also be considered.

**Correspondence** is limited to specific comments or criticisms relating to a recent BJP paper, whose authors will be invited to reply in print.

### Originality of material

Manuscripts containing the same information as manuscripts under review, accepted or published, will not be considered. This restriction does not apply to results published by the authors as abstracts, letters to editors, or contributions to symposia, provided that the manuscript submitted adds significantly to the previously published contribution. Authors must ensure that copyright restrictions do not preclude the reuse of any text or figures from other publications.

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Submission of a manuscript will be taken to indicate:

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(c) that all authors have seen and approved the final version of the submitted paper;
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(e) that no part of the manuscript is currently under consideration for publication elsewhere.

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### Ethical and Animal Welfare Issues

BJP requires that the conditions under which human and animal experiments are performed are consistent with prevailing standards in the U.K.

Studies on animals must comply with the prevailing standards of animal welfare embodied in U.K. laws governing animal experimentation.

For advice on ethical and animal welfare issues, authors may wish to consult the British Pharmacological Society's Ethics Committee via the BJP editorial office.

Authors must make it clear that the procedures they used were as humane as possible and complied with the guidelines for animal care of their institutions or with national/international guidelines.

Studies involving human subjects must be carried out with the formal approval of the relevant Ethical Committee, and **evidence of such approval must be provided. Papers concerned with clinical trials of drugs on patients are not appropriate for BJP**.

## Language and style

Authors are strongly urged to keep their manuscripts as short as possible.

Particular care should be given to drafting titles and summaries, since these appear in literature search engines, and determine whether or not readers will wish to consult the full paper.

BJP attaches importance to the use of correct, clear, reader-friendly English. As a service to authors, particularly those whose first language is not English, BJP is able to offer, at the Editor's discretion, a free of charge language and copy-editing service to improve the quality of selected manuscripts that are acceptable for publication on scientific grounds.

## Abbreviations

Abbreviations should be used as little as possible, and explained in brackets – for example, bradykinin (BK). An alphabetical list of non-standard abbreviations should be provided – for example HUVEC, human umbilical vein endothelial cells; VSMC, vascular smooth muscle cells. The full name plus abbreviation should also be used in the text on first mention. Commonplace abbreviations need not be included. See Table 1.

## Nomenclature

Standard pharmacological nomenclature should be used (see Appendix I). Nomenclature of ion channels, receptors, transporters, etc. should conform to BJP's Guide to Receptors & Channels, (Vol. 147 S3), (http://www.nature.com/bjp/journal/vgrac/ncurrent/index.html) and to IUPHAR guidelines, as published in Pharmacological Reviews.

## Subject categories

BJP publishes full papers under the following categories:
Biopharmaceuticals
Cancer Pharmacology
Cardiovascular and Pulmonary Pharmacology
Drug Discovery
Gastrointestinal Pharmacology
Genitourinary, Renal and Endocrine Pharmacology
Immunopharmacology and Inflammation
Methods and Techniques
Molecular and Cellular Mechanisms
Neuropharmacology
Pharmacokinetics, Drug metabolism, Toxicology

Authors should indicate the category into which their work best fits.

# *Preparation of Manuscript*

Manuscripts must be paginated consecutively with the title page being designated page 1.

## Full Papers

Manuscripts must be accompanied by a covering letter, stating clearly why the work is considered suitable for publication in BJP, and explaining the importance of the work for the understanding of drugs and drug action. Please note that details of any preliminary publication of the work must be given in the submission letter and where possible a manuscript tracking reference provided.

Manuscripts must include:

1. Title page
2. Summary
3. Introduction
4. Methods
5. Results
6. Discussion and conclusions
7. Acknowledgements
8. List of references
9. Tables
10. Figures and Legends
11. Statement of conflicts of interest.

### *Title page*

The title page should be paginated as page 1 of the manuscript.

The title should normally contain **no more than 150 characters (including spaces)** and should not consist of more than one sentence. It must clearly indicate the subject matter of the paper and any assertions must be justified by the results presented in the paper. Titles should be drafted carefully to indicate broadly what the paper is about and to encourage readership. Cumbersome chemical names, technical details, and unfamiliar abbreviations should be avoided. A short **running title** containing not more than 50 characters (including spaces) is **also required**. The title page should include the names and addresses of authors. Authors' present addresses differing from those at which the work was carried out should be given as footnotes on the title page and indicated in the author list by superscript numbers. The author to whom correspondence should be sent should be identified in a footnote, and an e-mail address must be given. **No other footnotes are permitted.**

### *Summary*

The summary will be printed at the beginning of the paper. **It must not exceed 250 words** and should be easily readable and intelligible to the non-specialist, and suitable for direct transcription by abstracting services. The summary should convey clearly the key messages of the work. References must not be included in the summary. Abbreviations must be kept to a minimum and non-standard abbreviations explained in brackets. The summary must be organized under the following subject headings (not as undivided text or numbered paragraphs):

**Background and purpose.** This must indicate why the study was performed, and what question it was intended to answer.

**Experimental approach.** This should state in outline what methods were used. Details of incubation media, buffers, drug concentrations, time-points, animal strains, statistical tests etc.

should not be given unless they are important in relation to the question that was addressed.

**Key results.** The main results relevant to the question addressed should be summarised, without quantitative elaboration. (E.g. 'Drug X increased coronary blood flow by 25%, whereas drug Y had no effect' rather than 'Coronary blood flow after drug X ($10\,\mu mol\,min^{-1}$ i.v. for 15 min) was increased from $19.4 \pm 3.2\,ml\,min^{-1}$ (mean $\pm$ s.e.m, $n=6$) to $26.2 \pm 4.1\,ml\,min^{-1}$ ($n=6$). The effect was statistically significant ($0.01 < P < 0.05$). After drug Y ……etc'

**Conclusions and Implications.** As well as summarizing the main inferences that follow from the results, and mentioning important shortcomings and caveats, this paragraph must clearly indicate in what way the work has advanced understanding in the field.

**Keywords.** Up to 10 keywords or phrases of two to three words (including names and terms used in the title) should be displayed at the end of the summary. Avoid unhelpful or unqualified terms such as 'inhibition', 'drug' etc. Abbreviations and keywords should be detailed at the foot of the summary page.

*Introduction*

The introduction should give a short and clear account of the background of the problem and the rationale of the investigation. Only previous work that has a direct bearing on the present problem should be cited. The final sentence should summarise the broad conclusions of the paper.

*Methods*

The methods must be described in sufficient detail to allow the experiments to be interpreted and repeated by an experienced investigator. Where published methods are used, references should be given, together with a brief outline. For experiment studies, the methods are presented in headed paragraphs covering:

**Test systems used (animal tests, isolated tissues, cultured cells, in vitro systems, etc);**
**Measurements made (with technical details);**
**Experimental design;**
**Data analysis and statistical procedures;**
**Drugs, chemicals reagents and other materials (including sources).**

For animal studies, the species, strain and total number used must be stated, as well as conditions of maintenance (food, water, light/dark cycles and compliance with ethical guidelines). The doses (initial and subsequent) of anaesthetics and analgesics should be clearly stated; the method of assessing anaesthesia, particularly after the administration of neuromuscular blocking drugs, must be clearly stated. For animal studies performed under anaesthesia vital signs (e.g. blood pressure, heart rate and blood gases) should be monitored and these data be included in the Methods.

The description of drugs, chemicals and other materials should include the names and brief address of the relevant suppliers. Drug names should be International Non-proprietary Names (INN). See website http://mednet.who.int for a full list. If a drug has no INN its full chemical name must be used (for nomenclature rules, see Handbook for Chemical Society Authors (London, Chemical) Society – http://rsc.org), or its structural formula given. Cumbersome chemical names should be suitably abbreviated for later reference in the paper.

*Results*

The description of the experimental results should be succinct, but in sufficient detail to allow the experiments to be analysed and interpreted by an independent reader. Typical single experiments may be presented with a clear statement that n number of similar experiments had similar results. Where appropriate, however, the mean results with confidence limits or standard errors, and the number of observations, should be given. Statistical tests of significance should be performed where appropriate.

Headed paragraphs should be used to subdivide the text for ease of reference.

Repetition of data in the text, tables and figures should be avoided. The rationale for performing the experiments may be briefly mentioned in the Results section, but conclusions should not be presented. Theoretical considerations may be included if appropriate to the results.

*Discussion and Conclusions*

The purpose of the discussion is to present a brief (normally not exceeding 1500 words) and pertinent interpretation of the results against the background of existing knowledge. Any assumptions on which conclusions are based must be stated clearly. Recapitulation of the results should be avoided. A review-like treatment, which reduces the impact on the reader, should also be avoided. The main conclusions should be conveyed in a final paragraph with a clear statement of how the study advances knowledge and understanding in the field.

*Acknowledgements*

Acknowledgements should be brief but should include reference to sources of financial support. Sources of drugs not widely available commercially should be acknowledged.

*References*

In the text, references to other work should take the form: (Bolton & Kitamura, 1983) or 'Bolton & Kitamura (1983) showed that…' For further details of reference formatting, see the **Formatting and Technical Instructions section**.

References to 'unpublished observations' or 'personal communications' should be mentioned in the text only, and not included in the list of references. Papers which have been **accepted** for publication may be included in the list of references as 'in press'. Copies of these papers should also be included in the supplementary information section accompanying the submitted manuscript.

**Papers in preparation or which have been submitted but not yet finally accepted for publication must not be included in the list of references.**

*Tables*

Each table should be given on a separate page, paginated as part of the paper. Tables should be numbered consecutively with Arabic numerals and the number should be followed by a brief descriptive caption, occupying not more than two lines, at the head of the table. Tables should normally be self-explanatory, with necessary descriptions provided underneath the table. For further details please see the **Formatting and Technical Instructions Section.**

*Figures and Legends*

To avoid unnecessary figures, particularly those requiring half-tone reproduction, only critical points of the text should be illustrated. Authors are encouraged to use colour to enhance the impact and clarity of figures. **There is no charge for using colour in the online HTML version of the paper, but the cost of colour figures in the print and PDF version will be charged to the author**. Upon acceptance, authors will be notified of their colour charges by the Production Office.

Figure legends should be typed on a separate page. Legends should explain the figures in sufficient detail that, whenever possible, they can be understood without reference to the text. Legends, captions and labels should be consistent with terminology or nomenclature used in the text.

For details of required formats for figures, including photographic images, see **Formatting and Technical Instructions section.**

*Statement of conflicts of interest*

This should indicate any financial links including consultancies with manufacturers of material or devices described in the paper as well as links to the pharmaceutical industry or regulatory agencies or any other potential conflicts of interest. If no conflict of interest exists ''None'' must be entered under this heading.

## Review Articles, Commentaries and Correspondence

The same conventions as described for Full Papers, with respect to text style, figures, tables and references, apply also to other publication types. A summary (up to 250 words) is required for Reviews, although the paragraph headings stipulated for Full Paper summaries do not apply. Separate guidelines are available at http://mts-bjp.nature.com/cgi-bin/main.plex?form_type=display_auth_instructions. No summary is required for other publication types. The use of explanatory figures in the form of cartoons, flow-diagrams, etc. is encouraged. A conflict of interest statement must be included.

# *Submission of manuscripts*

To submit a manuscript, log on to www.brjpharmacol.org and follow the online submission procedure. If you are unable to submit your paper online, please contact the office for further assistance.

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Once submitted, manuscripts will be quality checked by the editorial office before being sent for review, usually by an Editor and two or more referees. The referees' comments and Editor's recommendation will be reviewed by the appropriate Senior Editor, who will communicate the decision to the Author. This process takes one month on average from submission to the initial decision. On acceptance, after any required changes have been made, proofs will normally be sent electronically within 2 weeks, with a request to correct and return them within 48 hours. Extensive corrections cannot be made at this time. The paper will then be published online in its final (pdf) form within 4 weeks, and in print about 6 weeks later. These timings are provisional, and do not include author delays.

Once published, papers are available in print and online to BJP subscribers. After 1 year from the date of hard copy publication all papers become freely available (open access). Immediate open access can be provided on payment of an author fee of £1250 (US$2500 or €1850). For further information, please contact the editorial office.

## *Formatting and Technical Instructions*

*Colour on the Web*

Authors who wish their articles to have free colour figures on the web (only available in the HTML full text version of manuscripts and NOT on the online PDF) must supply separate files in the following format. These files should be submitted as supplementary information and authors are asked to mention they would like colour figures on the web in their submission letter.

| | |
|---|---|
| **Width** | **500 pixels** (for single images) or 900 pixels (for multiple part images). Authors should select ''constrain proportions'' or equivalent instructions, to allow the application to set the correct height automatically. |
| **Resolution** | **125 dpi** (dots per inch) or ''Save for Web'' if using Photoshop |
| **Format** | **JPEG** for photographs<br>**GIF** for line drawings or charts |
| **Filenaming** | Please save image with .jpg or .gif extension to ensure it can be read by all platforms and graphics packages. |

**Detailed guidelines for submitting artwork can be found by downloading the Guidelines PDF at www.nature.com/aj/artworkguidelines.pdf**

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*Figures in Print*

Figures should be formatted as detailed below. For further information see www.nature.com/sj/information/artworkguidelines.pdf

**Minimum Resolutions:**

| | |
|---|---|
| Halftone images | 300 dpi (dots per inch) |
| Colour images | 300 dpi saved as CMYK |
| Images containing text | 400 dpi |
| Line art | 1000 dpi |

**Sizes:**

| | |
|---|---|
| Figure Width | 80 mm single column format<br>160 mm multi-part image |
| Text Size | 8 point (after reduction to printed size) |
| Font | Univers |
| Line Width | Between 0.5 and 1 point |

Subsection figure parts (a, b, etc.) should be labelled in lower case 8 pt Univers bold. The spacing between the parts of composite figures should be kept to the minimum consistent with clarity.

Lines must be bold enough, and symbols large enough to retain clarity after reduction to on-page size.

Lines, symbols and shading patterns must be clearly distinguishable even when closely spaced and reduced to page format.

Line figures should normally have only left and bottom axes.

Three-dimensional representations should not be used unnecessarily (e.g. for conventional bar charts).

*References*

The reference list at the end of the manuscript must be arranged alphabetically according to the surname of the first author. When the surnames of first authors are identical, the alphabetical order of the surnames of subsequent authors takes precedence over the year of publication. The authors' names are followed by the year of publication in brackets. If more than one paper by the same authors in one year is cited, a, b, c, etc. are placed after the year of publication, both in the text and in the list of references. Entries in the reference list should conform to Harvard style. For example:

**Journal Reference**
Connor, M. & Kitchen, I. (2006). Has the sun set on $\kappa_3$-opioid receptors? *Br. J. Pharmacol.* **147**, 349–350.

**Book Reference**
McGrath, J.C. & Daly C.J. (2005). Imaging adrenergic receptors and their function: the use of fluorescent-ligands and receptors to visualize adrenergic rceptors. In: *The Adrenergic Receptors, in the 21st Century*. ed. Perez, D.M. New Jersey: Humana Press, pp. 65–72.

*Supplementary Information*

For submission of supplementary information (data files, graphics, videos etc), see http://mts-bjp.nature.com/cgi-bin/main.plex?form_type=display_auth_instructions.

*Tables*

Each table should have a short title. Tables should if possible not exceed 120 characters per line (absolute limit 180), with spaces between columns counted as four characters. Each column should have a heading and the units of measurement should be given in parentheses in the heading. Numbers up to four digits should be shown without spaces; longer numbers should be spaced in 3 digit groupings, without commas. Additional information should be given below the table and 'call outs' are superscript letters (not symbols).

*Units and Symbols*

SI units and symbols should be used for physicochemical quantities. See Table 2. Pharmacological units ($EC_{50}$, $pA_2$, etc.) should conform to the definitions given in Table 3. Standard prefixes are listed in Table 3. Negative index notation (e.g. $mg\,kg^{-1}$, $pmol\,mm^{-2}\,min^{-1}$) should be used rather than solidus notation (e.g. mg/kg, pmol/mm$^2$/min). Please refer to the SI Guide www.bjpm.org/en/si/ for standard units.

**Table 1** Common abbreviations that may be used without explanation

**Chemical and biochemical names**

| | |
|---|---|
| (−)- | laevo-(optical rotation) |
| (+)- | dextro-(optical rotation) |
| L, D | Enantiomeric forms (absolute configuration) |
| AC | adenylyl cyclase |
| ACE | angiotensin converting enzyme |
| Acetyl CoA | acetyl Coenzyme A |
| ACh | acetylcholine |
| AChE | acetylcholinesterase |
| AMPA | amino-3-hydroxy-5-methylisooxazole-4-propionic acid |
| ATP, ADP, AMP, cAMP, GMP, GTP, etc | Nucleotides |
| ATPase, GTPase, etc | Nucleotide phosphatases |
| BSA | bovine serum albumin |
| cAMP | adenosine 3′,5′ cyclic monophosphate |
| cGMP | guanosine 3′,5′ cyclic monophosphate |
| ChAT | choline acetyltransferase |
| CoA | coenzyme A |
| COMT | catechol-*O*-methyl transferase |
| COX | cyclooxygenase |
| DAG | diacylglycerol |
| DNA, RNA, cDNA, mRNA, DNase, etc | Nucleic acids & related terms |
| DOPA | 3,4-dihydroxyphenylanine |
| EDTA | ethylenediaminetetraacetic acid |
| EGTA | ethylene glycol-bis ($\beta$-amino ethyl ether) tetraacetic acid |
| GABA | $\gamma$-aminobutyric acid |
| GAD | glutamic acid decarboxylase |
| GC | guanylyl cyclase |
| GTP$\gamma$S | guanosine 5′-3′thio-triphosphate |
| Hb | haemoglobin |
| HEPES | N-[2-hydroxyethyl]piperazine-N′-[2-ethanesulphonic acid] |
| 5-HT | 5-hydroxytryptamine |
| IgA;IgD;IgE;IgG;IgM | immunoglobulins |
| $K$ | equilibrium constant |
| $K_D$ | dissociation constant |
| $K_M$ | Michaelis constant |

| | |
|---|---|
| MAO | monoamine oxidase |
| NMDA | *N*-methyl-D-aspartate |
| NMR | nuclear magnetic resonance |
| NOS | nitric oxide synthase |
| PDE | phosphodiesterase |
| PI | phosphatidyl inositol |
| PK (A,B,C,G) | protein kinase (A,B,C,G) |
| PL($A_2$,C, D) | phospholipase ($A_2$,C,D) |
| PNMT | phenylethanolamine *N*-methyltransferase |
| Tris | 2-amino-2-hydroxymethyl-propan-1,3,-diol |
| TH | tyrosine hydroxylase |
| TK | tyrosine kinase |

**Pharmacological terms**

| | |
|---|---|
| $EC_{50}$ | effective concentration 50% of maximum response |
| $ED_{50}$ | effective dose 50% of maximum response |
| $IC_{50}$ | inhibitory concentration (e.g. 50% inhibition of maximum) |
| $pA_2$ | antagonist potency |
| $t_{1/2}$ | half-life |

**Routes of administration**

| | |
|---|---|
| i.a. | intra-arterial |
| i.c.v. | intracerebroventricular |
| i.d. | intradermal |
| i.m. | intramuscular |
| i.p. | intraperitoneal |
| i.t. | intrathecal |
| i.v. | intravenous |
| p.o | oral |
| s.c. | subcutaneous |

**Physiological terms**

| | |
|---|---|
| BP | blood pressure |
| CNS | central nervous system |
| CSF | cerebrospinal fluid |
| CVS | cardiovascular system |
| ECG | electrocardiogram |
| ECT | electroconvulsive therapy |
| EEG | electroencephalogram |
| EMG | electromyogram |
| epp | end plate potential |
| epsc | excitatory postsynaptic current |
| epsp | excitatory postsynaptic potential |
| GFR | glomerular filtration rate |
| ipsc | inhibitory postsynaptic current |
| ipsp | inhibitory postsynaptic potential |
| iu | international unit |
| $LD_{50}$ | lethal dose (in 50% of population) |
| mepp | miniature end plate potential |
| NANC | non-adrenergic, non-cholinergic |

**Statistical terms**

| | |
|---|---|
| $\bar{x}$ | mean value |
| ANOVA | analysis of variance |
| d.f. | degree of freedom |
| $n$ | number of observations |
| $P$ | Probability, denoting level of significance |
| $r$ | correlation coefficient |
| s.d. | standard deviation (of observed sample) |
| s.e.mean | standard error (of estimate mean value) |

**Technical and methodological terms**

| | |
|---|---|
| HPLC | high performance liquid chromatography |
| OD | optical density |
| PCR | polymerase chain reaction |
| p.p.m. | parts per million |
| RIA | radioimmunoassay |
| ELISA | enzyme-linked immunosorbent assay |
| r.p.m. | revolutions per minute |
| TLC | thin layer chromatography |
| $\tau$ | time constant |
| u.v. | ultraviolet |
| $\lambda$ | wavelength |
| wt. | weight |

**Table 2** Units and symbols

| *Quantities* | *Preferred Unit* | *Symbol* |
|---|---|---|
| Electrical current | ampere | A |
| Radioactivity | becquerel | Bq preferred to Ci ($3.7 \times 10^{10}$ Bq) |
| Molecular weight | dalton | Da |
| Electrical capacitance | farad | F |
| Weight | gram | g |
| Frequency | hertz | Hz |
| Volume | litre | l |
| Flow | litres per second (or min) | $1\,s^{-1}$ or $1\,min^{-1}$ |
| Amount of substance | mole | mol |
| Length | metre | m |
| Concentration | molar or moles per litre | M or mol $l^{-1}$ |
| Force | newton | N |
| Electromotive force | ohm | Ω |
| Pressure | pascal | Pa (mm Hg may be used for blood pressure) |
| Time | seconds, minutes, hours, days | s, min, h, d |
| Electrical conductance | siemens | S |
| Electromotive force | volt | V |
| Power | watt | W |

**Table 3** Standard decimal multipliers

| *Multiplier* | *Prefix* | *Symbol* |
|---|---|---|
| $10^{-2}$ | centi | c |
| $10^{-3}$ | milli | m |
| $10^{-6}$ | micro | $\mu$ |
| $10^{-9}$ | nano | n |
| $10^{-12}$ | pico | p |
| $10^{-15}$ | femto | f |
| $10^{-18}$ | atto | a |
| $10^{3}$ | kilo | k |
| $10^{6}$ | mega | M |
| $10^{9}$ | giga | G |
| $10^{12}$ | tera | T |