Phytopathogenic Mollicutes

An International Journal on Phytoplasma, Spiroplasma and other 'Phloem-limited Plant Pathogens'

Published by:
Technology Society of Basic and Applied Sciences

mollicutes.indianjournals.com

IndianJournals.com
A product of Diva Enterprises Pvt. Ltd.

Print ISSN: 2249-4669
Online ISSN: 2249-4677

Volume 3 • Number 1 • June 2013

Membership

Membership of Society should be applied to tsbas2011@rediffmail.com. The members of TSBAS will receive free either print online copy or print copy of the 'Phytopathogenic Mollicutes'. In case of print copy, the member will also have to bear the postage of journal.

Submission of Manuscripts

Author should submit their articles to the Editors-in-Chief of 'Phytopathogenic Mollicutes' through e-mail and online manuscript submission facility on mollicutes/indianjournals.com

Subscription

	Institutional		
	Indian (INR)	Foreign (US$)	(Euro)
Print+online	3600	300	250
Online	2247	281	225

All correspondence should be addressed to Indianjournals.com

Subscription Payment

Please send your payment to : **Indianjournals.com** (A product of Diva Enterprises Pvt. Ltd.)
B-9, Local Shopping Complex, A-Block, Naraina Vihar, Ring Road, New Delhi-110028, India
Phone: +91-11-45055555, Fax: 91-11-25778876, e-mail: subscription@indianjournals.com
website: mollicutes.indianjournals.com

Phytopathogenic Mollicutes

An International Journal on Phytoplasma, Spiroplasma and other 'Phloem-limited Plant Pathogens'

Published by:
Technology Society of Basic and Applied Sciences

mollicutes.indianjournals.com

IndianJournals.com
A product of Diva Enterprises Pvt. Ltd.

Print ISSN: 2249-4669
Online ISSN: 2249-4677

Volume 3 • Number 1 • June 2013

Contents

Phytopathogenic Mollicutes
Vol. 3(1), June 2013

Author Guidelines

Being peer-reviewed, the journal "Phytopathogenic Mollicutes" publishes original research reports, review papers, and communications screened by national and international researchers who are experts in their respective fields. Original manuscripts that enhance the level of research and contribute to new developments in the field of mollicutes research are encouraged and invited. The manuscripts must be unpublished and should not have been submitted for publication elsewhere. There are no publication charges.

Editorial contact: Editor's e-mail: mollicutesjour@gmail.com; ipwg2007@gmail.com

1. Guidelines for the preparation of Manuscripts

The authors should submit their manuscript in MS-Word (2003/2007) in single column, 1.5-line spacing as per the following guidelines. The manuscript should be organized to have **a Title page**, **Abstract**, **Introduction**, **Material & Methods**, **Results & Discussion**, **Conclusion**, **and Acknowledgment followed by References**. The manuscript should not exceed 20 pages including illustrations and tables in 1.5-line spacing.

- Take a margin of 3 cm (Left, Right, Top, and Bottom) on A4 paper.
- The **Title** of the paper should be in bold and title case. The **subtitle** to the main title should be in small case.
- **Keywords**: About 5–6 keywords should be indicated.
- The title should be followed by the author's name followed by the name of the co-authors.
- **Name of the corresponding author** should be **highlighted** with an **asterisk** (alongwith e-mail). This is the author with whom all future correspondences will be sent.
- The affiliation and complete official addresses of all the authors should be mentioned against their names in full. This information is **absolutely essential.**
- **Use the following font specifications** :
  Title: 14-point bold (title case and small case for sub-title), **Author's name**: 12-point bold, **Author's affiliation**: 12-point normal, **Headings**: 12-point bold, **Sub-headings**: 12-point italics, **Body text**: 11-point normal
- The manuscript must be in high quality English.
- Tables and figures must be inserted in the same files as the text and at the place where their mention is made in the text. The figures should be inserted in either JPEG or TIFF format. The table and figure numbers should be mentioned correctly in the text and the figures and tables should appear in the vicinity of their mention.
- All tables and figures should have caption. The format to be followed is **Figure/Table (number): title of the figure/table.** A list of tables and figures including their headings must be given separately in a page for reference.
- **Photographs and illustrations**: Image files should be optimized to the minimum possible size without compromising on the quality. The photos and illustrations should have a resolution of 300 dpi (minimum).
- **Equations**: Each equation should appear in a new line in the text. The equations referred to in the text should be numbered sequentially with their identifier enclosed in parenthesis, right justified. The symbols in these equations, where referred to in the text, should be enclosed in single quotation marks.

$$E = mc^2$$

- **References:** The papers in the references list must be cited in the text. The citation should be mentioned as author followed by the year in brackets. For example, (**Smith, 1969) or (Smith and Jones, 1987**). In case a sentence starts with a citation, only the year would be in brackets; for example, **Smith (1989) states that**… The reference details mentioned at the end should be in alphabetical order. Et al will be used only in case there are more than two authors. In such cases, mention the names of the first three authors followed by et al in the text. **However, the reference details will carry the names of the first author with et al**. For example: **Smith *et al.* (1978)**

Samples references are given below.

- **Journal citation** :

  Smart CD, Schneider B, Blomquist CL, Guerra LJ, Harrison NA, Ahrens U, Loernz KH, Seemüuller E and Kirkpatrick BC 1996. Phytoplasma-specific PCR primers based on sequences of the 16-23S rRNA spacer region. *Applied and Environmental Microbiology,* 62: 2988-2993.

- **Book citation** :

  Harrison NA, Rao GP and Marcone C (2008). Characterization, Diagnosis and Management of

Phytoplasmas. (Harrison NA, Rao GP, Marcone C, Eds) Studium Press LLC, U.S.A. pp. 1-399.

- **Book chapter citation :**

  Schneider B, Seemüller E, Smart CD and Kirkpatrick BC 1995. Phylogenetic classification of plant pathogenic mycoplasmalike organisms or phytoplasmas. In: Molecular and Diagnostic Procedures in Mycoplasmology, pp. 369-380. Eds. S. Razin and J.G. Tully. San Diego, CA: Academic press.

- **DOI publication citation :**

  Malembic-Maher S, Salar P, Filippin L, Carle P, Angelini E and Foissac X 2010. Genetic diversity of European phytoplasmas of the 16SrV taxonomic group and proposal of '*Candidatus* Phytoplasma rubi'. *International Journal of Systematic and Evolutionary Microbiology*, DOI 10.1099/ijs.0.025411-0, in press

- **Website citation :**

  Bertaccini A 2003. http://137.204.42.130/person/collection september_2003.pdf.

- **Abstract/Conference citation :**

  Zavaleta-Mejía E, Cárdenas SE and Gómez RO (1993). Organismos tipo micoplasma asociados con la filodia del cempazúchil. *XX Congreso Nacional de Fitopatologia, Zacatecas*, 1993, 15.

2. **Submission of Manuscript**

The manuscript must be submitted in **ms-word file** as an **e-mail attachment** to the either e-mail (mollicutesjour@gmail.com; ipwg2007@gmail.com). After acceptance of the manuscript the authors must send a signed copyright form that will be provided with acceptance to corresponding author. The authors shall also assign the copyright of the manuscript to the Publisher, IndianJournals.com (India).

3. Peer Review Policy

Review System: Every article is processed by a masked peer review process and edited before publication. The criteria used for the acceptance of article are: **relevance, update literature, logical analysis, relevance to the global problem, sound methodology, contribution to knowledge and fairly good English.** Authors will be communicated within two months from the date of receipt of the manuscript. The editorial office will endeavor to assist where necessary with English language editing but authors are hereby requested to seek local editing assistance as far as possible before submission. Papers with immediate relevance would be considered for early publication. Invited papers and editorials, or partial or entire issue is devoted to a special theme under the guidance of a Guest Editor will also be published.

The Editors-in-Chief may be reached at: mollicutesjour@gmail.com; ipwg2007@gmail.com

4. Proofs, reprints, colour plate charges, mode of payment

Once a manuscript is accepted, the corresponding author will receive a pdf preprint proof. Color plates will be charged extra @ Rs. 2,500 for India, US$ 100 and Euro 75 per page. Please draw your bank drafts or multicity at par cheque in favour of "**Technology Society of Basic and Applied Sciences" payable** at **Gorakhpur/ Delhi** and mail to : Dr. G.P. Rao, *Secretary,* Division of Plant Pathology, Indian Agricultural Research Institute, Pusa Campus, New Delhi-110012, India (Ph. : +91-9711763384) (Please add Rs. 25.00/US$ 5.00/Euro 5.00 for outstation cheques). Members of Society (TSBAS) will receive a copy of journal free of charge.

Phytopathogenic Mollicutes

An International Journal on Phytoplasma, Spiroplasma and other 'Phloem-limited Plant Pathogens'

Published by:
Technology Society of Basic and Applied Sciences

mollicutes.indianjournals.com

IndianJournals.com
A product of Diva Enterprises Pvt. Ltd.

Print ISSN: 2249-4669
Online ISSN: 2249-4677

LIBRARY RECOMMENDATION FORM

Please forward this form to your Librarian/Journal Procurement Section.

Recommended to : .....

I would like to recommend the following titles from **www.indianjournals.com** as a valuable addition to the organization's collection of information resources.

JOURNAL TITLE: **PHYTOPATHOGENIC MOLLICUTES**

Reasons for recommendations:

- It is an important resource for myself and my colleagues.
- I will be referring my students to this publication regularly to assist their studies.
- This publication will complement the library's collection and strengthen our information resources.
- I am an author or editor for this publication and therefore strongly support it.

Additional reasons

Recommended by : .....

Name : .....

Address : .....

.....

Designation : ..... Department : .....

e-mail : ..... Tel. no. : .....

Signature : ..... Date : .....

Phytopathogenic Mollicutes

An International Journal on Phytoplasma, Spiroplasma and other 'Phloem-limited Plant Pathogens'

Published by:
Technology Society of Basic and Applied Sciences

mollicutes.indianjournals.com

IndianJournals.com
A product of Diva Enterprises Pvt. Ltd.

Print ISSN: 2249-4669
Online ISSN: 2249-4677

Subscription Order Form for 2013

Name of the Subscriber : .....

Designation : .....

Organization/Institute : .....

Address : .....

.....

City : ..... Pin : ..... State : .....

Telephone No. (with STD code) : .....

Fax (with STD Code) : ..... E-mail : .....

1. Cheque/DD ..... Date : ..... INR/USD : .....

   drawn on ..... in favour of **Diva Enterprises Pvt. Ltd., payable at New Delhi.**

2. Please send Bill/Proforma Invoice (in Duplicate/Triplicate)

Subscription Rates for the year: 2013

Option	Indian (INR)	Foreign US$	Foreign Euro	Frequency
Print+online★★	3600	300	250	2 issues (likely to be increased)
Online★	2247	281	225	

Terms & Conditions :

1. Print★★ Subscription includes Complimentary Online Access of current year + back files from 2011.
2. Online only subscription★ has an addition of 12.36% service tax
3. Five concurrent users are allowed with unlimited downloads
4. Print subscription is volume based, whereas online subscription is calendar year based.
5. Online subscription rates are for single user/IP access only.
6. For online access, please give your Static IPs.
7. Indian Subscribers to add Rs. 100.00 for outstation Cheque.
8. In case of foreign subscription, payment is preferred by Bank Transfer. For details contact subscription@indianjournals.com

Please send this form to Ms Prema Mahadevan, Subscription Manager, INDIANJOURNALS.COM, B-9 Local Shopping Complex, A Block Naraina Vihar, New Delhi 110028. Tel: 011-45055538.

A-1/307, Shantidoot Apartment, Vasundhara Enclave, New Delhi-110096, India

AIMS AND SCOPE

Phytopathogenic Mollicutes journal is a half yearly official publication of the Technology Society of Basic & Applied Sciences (TSBAS), which will promote the interdisciplinary exchange of knowledge and ideas in recent researches on phytoplasma, spiroplasma and other 'phloem-limited plant pathogens'. The journal is unique of its kind because no journal in the world is available which covers all aspects of mollicutes viz: characterization, diseases, management, pathogen genes and genomes, taxonomy, evolution, host parasite interaction, transmission, vectors, epidemiology. This journal is being published by Indianjournals.com. The Phytopathogenic Mollicutes is planned with every aim to provide a high profile vehicle for publication of the most innovative, original and rigorous development in the basic and applied research on mollicutes. Interdisciplinary studies of fundamental problems on the subject are given high priority.

The structure of the journal takes into account the broad scope of R&D in phytopathogenic mollicutes research. Thus in addition to its full length and short papers on original research, the journal also includes regular features on editorial, review articles, meetings, scientific correspondence, new developments, current references on the subject from other sources and book reviews.

The TSBAS is not responsible for statements and opinions published in Phytopathogenic Mollicutes; they represent the views the authors or persons to whom they are credited and are not necessarily those of the society.

Submission information: All manuscripts and contributions should be submitted to Editors-in-Chiefs by e-mail or online submission. Authors are requested to consult the "Instructions to Author" and aims and scope of the journal. The instruction is published in the first issue of the journal and also available on website: mollicutes.indianjournals.com. Review articles are welcome, but intending Authors should send an outline to the Editors-in-Chief before preparing their manuscript. Books for review should also be sent to Editors-in-Chief.

Publication Information: Phytopathogenic Mollicutes (Print ISSN: 2249-4669; Online ISSN: 2249-4677). For 2012, volume 2 (No. 2) is scheduled for publication. Membership of Society and Personal subscription prices are available upon request from the Society at e-mail: tsbas2011@rediffmail.com. Membership and subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent by standard mail (surface within India and air delivery outside India).

Order, Claims & Journal Enquiries: For membership pl contact tsbas2011@rediffmail.com. Claims for missing issues should be made within 3 months of the date of dispatch to the society (in the case of membership) or publisher (institutional subscriber) to e-mail subscription@indianjournals.com. Other journal enquiries should also be asked at publisher e-mail.

Phytopathogenic Mollicutes
Vol. 3(1), June 2013, 1-2

doi :

IndianJournals.com
A product of Diva Enterprises Pvt. Ltd.

New Research Highlights

Comments on "The culture of plant pathogenic phytoplasmas in axenic media" (Contaldo *et al.*, 2012)

Govind P Rao

Plant Pathology, Division of Plant Pathology, Indian Agricultural Research Institute, Pusa Campus New Delhi 110012, India

The findings reported prove that phytoplasmas, previously thought to be non-culturable, can now be grown on laboratory media. This is an important breakthrough in the study and management of phytoplasma-incited plant diseases.

Since phytoplasma discovery in 1967 (Doi *et al.*, 1967, Ishiie *et al.*, 1967; Maramorosch *et al.*, 2011), the proof of their pathogenicity is lacking due inability to isolate and grow them in culture. This roadblock has hindered studies of phytoplasma biology, biochemistry and physiology, although significant taxonomic progress has been achieved by the study of the 16S ribosomal gene and the full sequencing of genomes from four strains (Oshima *et al.*, 2006; Bai *et al.*, 2006; Kube *et al.*, 2008; Tran-Nguyen *et al.*, 2008).

The inability to fulfil Koch's postulates severely restricted the understanding of the roles of phytoplasmas in disease etiology and plant–insect-phytoplasma interactions.

In contrast to mycoplasmas, which cause an array of disorders in animals and humans, phytoplasmas resisted all attempts to culture them in cell-free media. However, following the application of techniques of molecular genetics, their enigmatic status was resolved and led to the designation of a new taxon named '*Candidatus* phytoplasma' (IRPCM, 2004). Despite reduced genome size in comparison to their ancestors, retain an independent metabolism that allows them to survive in environments as diverse as plant phloem and insect haemolymph. This versatility is a unique property among microbes, shared only with some animal- or plant-infecting viruses and a few other microorganisms such as the causal agent of malaria.

The paper describes how, employing specific commercially available media, it was possible to achieve the axenic growth of seven phytoplasmas belonging to diverse ribosomal groups.

Contrary to the prevailing dogma in plant pathology, therefore, phytoplasmas, like mycoplasmas, can indeed be grown independently from the host(s). The commercial medium used for phytoplasma isolation and cultivation utilizes media available for purchase at Phytoplasmas *in vitro* Ltd. (Reigate, UK), although their composition is proprietary; a patent was submitted (Bertaccini *et al.*, 2012) to cover the commercial exploitation of the methodology. However, research carried out for scientific purposes, is not restricted by the patent.

Another key point for *in vitro* cultivation is that micropropagated periwinkle shoots infected with phytoplasmas were used for initial isolation. These can be obtained from the official collection of phytoplasma strains in micropropagation (http://www.ipwgnet.org/index.php/collection.html) (Bertaccini *et al.*, 1992).

Inspite of the relatively long time required for isolation in liquid medium, colony growth of phytoplasmas in agar usually occurs within two to five days, which makes the technology more easy applicable once isolation is obtained. When observed with a binocular microscope, the colonies are comparable in size and appearance to those of mycoplasmas. PCR amplification using phytoplasma specific primers under previously described conditions, confirmed that the colonies were indeed identical to the phytoplasmas that were initially transferred to the agar plates. Identification using RFLP analysis and direct sequencing of selected amplicons confirmed phytoplasma identity.

Corresponding author e-mail : gprao_gor@rediffmail.com

References

Bai X, Zhang J, Ewing A, Miller SA, Radek AJ, Shevchenko DV, Tsukerman K, Walunas T, Lapidus A, Campbell JW and Hogenhout SA 2006. Living with genome instability: the adaptation of phytoplasmas to diverse environments of their insect and plant hosts. *Journal of Bacteriology*, 188: 3682–3696.

Bertaccini A, Davis RE and Lee I-M 1992. *In vitro* micropropagation for maintenance of mycoplasmalike organisms in infected plant tissues. *Horticultural Science*, 27(9): 1041-1043.

Bertaccini A, Contaldo N and Windsor DG 2012. Method For Culturing Phytoplasma. Pct/Ib2012/052965, *Alma Mater Studiorum* - Università di Bologna - Phytoplasmas *In Vitro* Ltd.

Contaldo N, Bertaccini A, Paltrinieri S, Windsor HM and Windsor DG 2012. Axenic culture of plant pathogenic phytoplasmas. *Phytopathologia Mediterranea*, 51(3): 607-617.

Doi Y, Teranaka M, Yora K and Asuyama H 1967. Mycoplasma or PLT grouplike microrganisms found in the phloem elements of plants infected with mulberry dwarf, potato witches' broom, aster yellows or pauwlonia witches' broom. *Annals Phytopathological Society Japan*, 33: 259-266.

IRPCM 2004. '*Candidatus* Phytoplasma', a taxon for the wall-less, non-helical prokaryotes that colonize plant phloem and insects. *International Journal of Systematic and Evolutionary Microbiology*, 54: 1243-1255.

Ishiie T, Doi Y, Yora K and Asuyama H 1967. Suppressive effects of antibiotics of tetracycline group on symptom development of mulberry dwarf disease. *Annals Phytopathological Society Japan*, 33: 267-275.

Kube M, Schneider B, Kuhl H, Dandekar T, Heitmann K, Migdo AM, Reinhardt R and Seemüller E 2008. The linear chromosome of the plant-pathogenic mycoplasma '*Candidatus* Phytoplasma mali'. *BMC Genomics*, 9: 306.

Maramorosch K 2011. Historical reminiscences of phytoplasma discovery. *Bulletin of Insectology*, 64(Supplement): S5-S8.

Oshima K, Kakizawa S, Nishigawa H, Jung H-Y, Wei W, Suzuki S, Arashida R, Nakata D, Miyata S, Ugaki M and Namba S 2004. Reductive evolution suggested from the complete genome sequence of a plant-pathogenic phytoplasma. *Nature Genetics*, 36: 27-29.

Tran-Nguyen LT, Kube M, Schneider B, Reinhardt R and Gibb KS 2008. Comparative genome analysis of '*Candidatus* Phytoplasma australiense' (subgroup tuf-Australia I; rp-A) and '*Ca*. Phytoplasma asteris' strains OY-M and AY-WB. *Journal of Bacteriology*, 190: 3979-3991.