

# NABS *News Letter*

National Academy of Biological Sciences

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FOR PRIVATE CIRCULATION ONLY

July 2019

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Former Chairperson, NBA, GOI, Chennai

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## From the Desk of President.....



Dear NABSians,

*Greetings form NABS.*

Let me extend my hearty congratulations to all the Fellows elect and awardees for the year 2018. You may be already aware that the 11<sup>th</sup> NABS-National Conference on “Climate Change Driven Challenges on Indian Biodiversity: Innovative Solutions for Sustainable Development” is to be organized at Pondicherry University, Puducherry, India from 25 to 27 September 2019. It will be befitting if you could personally receive Fellowship / Awards.

May be many of our members are working in areas of climate change and 'am requesting you all to contribute to forthcoming conference.

I am also happy to share with you that a book entitled “The Birth and Evolution of NABS-Through 2004 to 2018” is also be released during the inaugural function of the conference. Prof. M.S. Swaminathan has given foreword to the book which has 14 chapters including 24 pages of photo gallery depicting the activities of NABS (total pages 360). The book is prized at Rs.1500/-but subsidized to Rs.500/- for NABS-ians. All are requested to avail this and enjoy going through the evolution of NABS since 2004.

Let us all meet at Puducherry to deliberate the challenges of climate change which we now experience. Long live NABS!

(V. A. Parthasarathy)  
President, NABS

## 2. Message from Vice-President...



*My hearty greetings to all the NABS-ians.*

The global climate is changing currently and is predicted to change drastically in the years to come increasing atmospheric CO<sub>2</sub> concentration and temperature but decreasing soil water content enhancing drought in several areas of the world. These climate changes will not only affect plants and animals but also microorganisms. Soil is the store house of variety of microorganisms which affect plant growth in many ways. Currently there is considerable importance given to research on how climate change affects soil microbes and soil microbe-plant interactions. Some conclusions can be drawn from the research done so far. Elevated CO<sub>2</sub> has a positive influence on the symbiotic microorganisms like Arbuscular Mycorrhizal fungi, ectomycorrhizal fungi and rhizobia. The effect on plant growth promoting rhizomicroorganisms (PGPR) and plant pathogens in soil are variable. The effects of increased temperature on PGPR are more variable; positive; neutral or negative based on the plant species, ecosystem type, soil type and microbial genotype. However, the altered microbial diversity, because of elevated temperature, seems to help plants to overcome drought stress. This is the information available so far. We will all be assembling for the next conference of NABS on “Climate Change Driven Challenges on Indian Biodiversity: Innovative Solutions for Sustainable Development” at Pondicherry University from 25 to 27 September 2019. I am sure that many interesting papers will be presented on climate change and its influence on micro and macro organisms occurring in India.

(D.J. Bagyaraj)  
Vice-President

## 3. Message from Editor...



*My best wished to all @ NABS!*

The time ahead is bound to be both challenging and exciting. Exciting because we are all set to steamroll the ambitious NABS-National Conference on “Climate Change Driven Challenges on Indian Biodiversity: Innovative Solutions for Sustainable Development” scheduled from 25 to 27 September 2019 at Pondicherry University, Puducherry, India. Challenging because of the threats humanity is facing due to climate change driven catastrophes. No wonder the G20 has released a statement calling climate change “one of the greatest challenges of our time”. The theme of the 11<sup>th</sup> NABS-National Conference is very appropriate and timely and I am proud that NABS has set the platform for a comprehensive deliberation on this burning topic. I am sure this will be an opportunity to put real action behind long-term commitments and reiterate the need for a robust and ambitious global climate agreement. Another important event during the conference would be the release of our book on “The Birth and Evolution of NABS-Through 2004 to 2018”.

The news of deficient rainfall in the first month of southwest monsoon is an area of concern and strategies to mitigate the problems need to be focused by all concerned. I expect participation in large numbers in the forthcoming NABS event and promise that this will be a unique learning experience for everyone who is research-active besides allowing you to meet and exchange ideas with researchers from around the country.

I also take this opportunity to congratulate all the newly elected fellows and awardees for the year 2018.

(M. Anandaraj)  
Editor, NABS NL

## 4. News and Events

### Obituary

#### Prof. Munusamy Vivekanandan [15-09-1946 to 11-05-2019]

Dr. M. Vivekanandan was born on 15 September, 1946 at Tiruvannamalai of Tamil Nadu, India. He served at Bharathidasan University in several capacities: as in-charge Vice Chancellor (2003-2004); Director, School of Engineering & Technology; Professor & Head, Department of Biotechnology, School of Life Sciences. He specialized in areas of Environmental Biotechnology, Bioremediation, Sericulture, Molecular Biology, Biochemistry, Biodiesel Technology, Photosynthesis, Nano Technology and Enzyme Technology.

He was a Fulbright Fellow (1985-86) and Fellow of Linnaean Society (FLS), London; Academy of Environmental Biology (FAEB), Luknow; Academy of Sciences (FASc); National Academy of Biological Sciences, Chennai.



Prof. Vivekanandan attained eternal bliss on 11 May, 2019 at his residence at Tiruchirappalli, Tamil Nadu. NABS-ians deeply condole the demise of Prof. Vivekanandan and convey the grief and sorrow to the grieved members of his family and friends. WE pray ALMIGHTY to give his family members all the strength to bear the great loss. MAY HIS SOUL REST IN PEACE!

#### 4.1. Eleventh NABS-National Conference- Salient features

The NABS-National Conference on “Climate Change Driven Challenges on Indian Biodiversity: Innovative Solutions for Sustainable Development” is scheduled from 25 to 27 September 2019 at Pondicherry University, Puducherry, India. All the NABS-ians are requested to motivate your students and colleagues to participate and contribute.

Prof. Gurmeet Singh, Vice Chancellor, Pondicherry University, Puducherry, India will preside the inaugural function; Prof. K.P. Viswanatha, Vice Chancellor, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra will be the Chief Guest; Prof. R. R. Hanchinal, Former Chairperson, Protection of Plant Varieties and Farmers' Rights Authority, Government of India and Prof. P. Duraisamy, Vice Chancellor, University of Madras, Chennai has consented to be the Guests of Honor; Prof. P.P. Mathur, Dean, School of Life Sciences, Pondicherry University felicitates.

Dr. Joseph Selvin, Professor and Coordinator, Department of Microbiology, School of Life Sciences, Pondicherry University is the organizing Secretary of the NABS-Conference.

Dr. S. Sivasankari, UGC PDF & Dr. P. Ramasamy, UGC PDF Department of Microbiology, School of Life Sciences, Pondicherry University are the Program Coordinators of the Conference.

#### NABS-Recognition Award

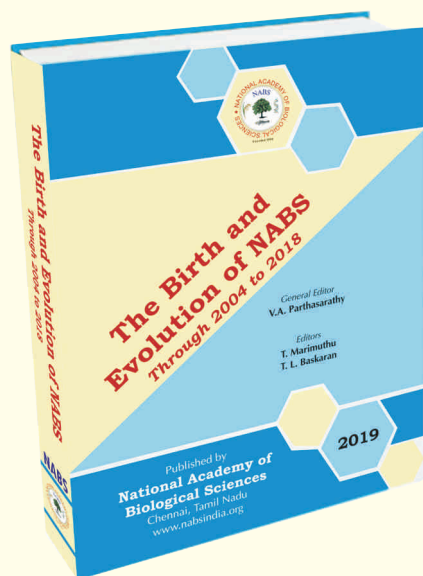
The Executive Council of NABS has decided to confer “NABS-Recognition Award” on Prof. Gurmeet Singh and Prof. P. Duraisamy. The award will be conferred on them by President, NABS during the inaugural function of NABS-Conference.

#### Prof. S. Kannaiyan Memorial Oration

Prof. S. Kannaiyan Memorial Laureate for the year 2018, Prof. K.P. Viswanatha, Vice Chancellor, MPKV, Rahuri, will deliver an oration on “*Role of Carbon in Agriculture and Environment*”

Prof. S. Kannaiyan Memorial Laureate for the year 2019, Prof. Anil Kumar Srivastava, Member, ASRB, New Delhi and Former Director and Vice Chancellor, NDRI, Karnal, will deliver an oration on “*The Bumpy Journey of Food and Nutrition Security*”

### Release of NABS- Book “The Birth and Evolution of NABS-Through 2004 to 2018”



National Academy of Biological Sciences proudly announces the release of the book on NABS “*The Birth and Evolution of NABS-Through 2004 to 2018*” with Foreword of Prof. M.S. Swaminathan.

The book highlights the progress and achievements of NABS over more than a decade of its establishment. The book contains 13 chapters with photo galleries [24 pages] in color.

The book is printed with ISBN number with a size of 180x245 mm contains 360 pages printed in 100gsm art paper single color with thick wrapper of 170gsm art paper by offset process.

The book will be released during the inaugural function of 11<sup>th</sup> NABS-National Conference by the Chief Guest, Prof. Dr. K.P. Viswanatha, Vice Chancellor, MPKV, Rahuri, MS.

Priced at Rs.1500/- per copy; available for sale at the counter.

Formore details contact : [secretarynabs@gmail.com](mailto:secretarynabs@gmail.com)

### 4.2. Fellowship and NABS-Awards for 2018

For the Election Year 2018 the following NABS-ians are selected for Fellowship and various other NABS awards. The Fellowship and Awards will be conferred on them during 11<sup>th</sup> NABS-National Conference and AGM scheduled from 25-27 September 2019 at Pondicherry University, Puducherry, India.

S. No.	Fellowship / Award	Name & address of Awardee
A.	<b>Prof. S. Kannaiyan Memorial Award (2019)</b>	: <a href="#">Prof. Anil Kumar Srivastava</a> Member, Agricultural Scientists Recruitment Board, Krishi Anusandhan Bhawan-I, Pusa Campus, New Delhi-110 012.
B.	<b>Dr. APJ Abdul Kalam Memorial NABS- Life Time Achievement Award (2018)</b>	: <a href="#">Dr. Brahma Singh</a> Former Director, Life Sciences, DRDO, New Delhi, E-713, Mayur Vihar, Phase - 2, Delhi - 110091, 09818313660 <a href="mailto:brahma88@gmail.com">brahma88@gmail.com</a>

### C. Fellowship (2018)

*Under Agricultural Sciences & Forestry*

01	<a href="#">Dubey, S.C.</a> Division of Plant Quarantine ICAR-National Bureau of Plant Genetic Resources, Pusa, New Delhi - 110012 E-mail: <a href="mailto:scdube2002@yahoo.com">scdube2002@yahoo.com</a>	02	<a href="#">Kolla Sreedevi</a> Senior Scientist, Division of Germplasm Collection and Characterization, ICAR - National Bureau of Agricultural Insect Resources, H.A. Farm Post, Hebbal, Bellary Road, Benagaluru-560 024, Karnataka E-mail: <a href="mailto:kola.sreedevi@gmail.com">kola.sreedevi@gmail.com</a>
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*Under Basic Sciences*

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*Under Veterinary & Fisheries*

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*Under Food & Nutrition* : No application received or selection made

**D. Associate Fellowship (2018)**

*Under Veterinary & Fisheries*

**Rajib Deb**  
Scientist (SS)  
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**E. Dr. E. K. Janaki Ammal Memorial NABS- Best Woman Scientist Award (2018)** : **Padmaja, P.G.**  
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Telangana  
E-mail: padmaja@millets.res.in

**F. NABS- Best Scientist Awards (2018)**

*i. Under Agricultural Sciences & Forestry*

**Dr. B. Pal Memorial NABS-Best Scientist Award**

**Bikash Mandal**  
Principal Scientist  
Advanced Centre for Plant Virology,  
Division of Plant Pathology,  
Indian Agricultural Research Institute,  
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*ii. Under Basic Sciences*

**Dr. G. S. Venkataraman Memorial NABS-Best Scientist Award**

**Prakash M Halami**  
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**G. Dr. G. N. Ramachandran Memorial NABS-Young Scientist Award (2018)**

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**H. NABS- Best Research Paper Awards (2018)**

*i. Under Agricultural Sciences & Forestry*

**Prof. G. Rangaswami Memorial NABS-Best Research Paper Award**

**Vinodkumar, S.**  
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*ii. Under Basic Sciences*

**Prof. T. S. Sadasivan Memorial NABS-Best Research Paper Award**

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### 4.3. Carl Linnaeus Award & Prof. M.S. Swaminathan Award for 2019

- Full length papers are invited for the year 2019. For application and brochure visit NABS website: [www.nabsindia.org](http://www.nabsindia.org)
- The awards are meant for Ph.D./M.Sc. students respectively.
- Carl Linnaeus Award (For Ph. D. Students) carries a certificate and cash prize of Rs.5000/-
- Prof. M.S. Swaminathan Award ( For M.Sc. students) carries a certificate and cash prize of Rs.4000/-
- The award competition will be held only when a minimum of THREE selected applicants are available for presentation during NABS-National Conference / Seminar.
- If the above criteria are not fulfilled no completion will be held.
- The applicants are requested to look for the Announcement / Brochure of 11<sup>th</sup> NABS-National Conference to be held from 25-27 September 2019 at Pondicherry University, Puducherry.
- The aspirants are requested to go through the rules and regulations for these awards and apply in time.

## 5. Research Highlights

### 5.1. \*Diversity and antiviral potential of rhizospheric and endophytic *Bacillus* species and phyto-antiviral principles against tobacco streak virus in cotton.

[\* Selected for 'Prof. G. Rangaswami Memorial NABS-Best Research Paper Award for the Year 2018-Under Agricultural Sciences and Forestry]

Plant growth promoting rhizobacteria are widely exploited for the management of various fungal and bacterial diseases in plants. However, antiviral action of PGPR and their efficiency have been rarely investigated. In the present study, influential diversity of *Bacillus* species was related with tobacco streak virus (TSV) infection in cotton. The study revealed that, the population of *B. subtilis*, *B. licheniformis* and *B. velezensis* in rhizosphere of apparently healthy cotton plants were comparatively higher than TSV infected plants, indicating that they efficiently colonized the rhizosphere. Similarly, the population of the endophytic *B. cereus* and *B. licheniformis* were relatively higher in apparently healthy than TSV infected cotton plants. In vitro screening of rhizospheric, endophytic *Bacillus* species and phyto-antiviral principles revealed that rhizospheric *B. amyloliquefaciens* (VB7) and endophytic *B. licheniformis* (CoEH6) were effective in the suppression of TSV symptoms in indicator host (cowpea).

The strain *B. amyloliquefaciens* (VB7) contained ten antimicrobial peptide genes responsible for the biosynthesis of antibiotics including, iturin, bacilysin, bacillomycin, surfactin, subtilin, and subtilosin. Moreover, the strain VB7 is reported to secrete entadecanoic acid, heptadecenoic acid, octadecenoic acid, pyrrolo, piperazinedione and tetradecenoic acid, which would have together complemented in the antiviral activity. Upon simultaneous inoculation of the bacterium or phyto-antiviral principles with TSV in the indicator host plant, revealed that *B. amyloliquefaciens* (VB7) and *M. jalapa* were much effective and reduced the number of lesions up to 2.22/leaf and 3.00/leaf respectively compared with TSV inoculated control (25.28 lesions cm<sup>-2</sup> area). Further, under field conditions, soil application and foliar spray of the *B. amyloliquefaciens* (VB7) resulted in 52 per cent reduction in TSV incidence. For reference TSV incidence in *B. amyloliquefaciens* (VB7) treated and untreated plots were 21.67 (PDI) and 45 (PDI) respectively. Moreover, *B. amyloliquefaciens* (VB7) improved seed cotton yield upto 149.45 g/plant compared to control (97.71 g/plant). Thus *B. amyloliquefaciens* (VB7) was exploited as an efficient antagonist for the management of TSV in cotton.

**Vinodkumar, S., Nakkeeran, S., Renukadevi, P., Mohankumar, S. 2018.**  
*Agriculture, Ecosystems and Environment*, 267: 42-51.

## 5.2. *\*De novo* transcriptome sequencing and development of abscission zone-specific microarray as a new molecular tool for analysis of tomato organ abscission.

[\* Selected for 'Prof. T. S. Sadasivan Memorial NABS-Best Research Paper Award for the Year 2018- Under Basic Sciences]

Abscission of flower pedicels and leaf petioles of tomato (*Solanum lycopersicum*) can be induced by flower removal or leaf deblading, respectively, which leads to auxin depletion, resulting in increased sensitivity of the abscission zone (AZ) to ethylene. However, the molecular mechanisms that drive the acquisition of abscission competence and its modulation by auxin gradients are not yet known. We used RNA-Sequencing (RNA-Seq) to obtain a comprehensive transcriptome of tomato flower AZ (FAZ) and leaf AZ (LAZ) during abscission. RNA-Seq was performed on a pool of total RNA extracted from tomato FAZ and LAZ, at different abscission stages, followed by *de novo* assembly. The assembled clusters contained transcripts that are already known in the Solanaceae (SOL) genomics and NCBI databases, and over 8823 identified novel tomato transcripts of varying sizes. An AZ-specific microarray, encompassing the novel transcripts identified in this study and all known transcripts from the SOL genomics and NCBI databases, was constructed to study the abscission process. Multiple probes for longer genes and key AZ-specific genes, including antisense probes for all transcripts, make this array a unique tool for studying abscission with a comprehensive set of transcripts, and for mining for naturally occurring antisense transcripts. We focused on comparing the global transcriptomes generated from the FAZ and the LAZ to establish the divergences and similarities in their transcriptional networks, and particularly to characterize the processes and transcriptional regulators enriched in gene clusters that are differentially regulated in these two Azs. This study is the first attempt to analyze the global gene expression in different Azs in tomato by combining the RNA-Seq technique with oligonucleotide microarrays. Our AZ-specific microarray chip provides a cost-effective approach for expression profiling and robust analysis of multiple samples in a rapid succession.

**Srivignesh Sundaresan, SoniaPhilosoph-Hadas, JosephRiov, Raja Mugasimangalam, Nagesh A. Kuravadi, BettinaKochanek, ShoshanaSalim, Mark L.Tucker and ShimonMeir. 2016. *Frontiers in Plant Science*, 16: 1258**

## 5.3. Effect of *Adbatoda vasica*, *Chromolaena odorata* and *Clitoria ternatea* extracts as in immunostimulant against *Aeromonas hydrophila* and *Pseudomonas aeruginosa* in ornamental fish, *Danio rerio*

[Paper submitted for student award competition during 2017]

Aquaculture is an emerging industrial sector which requires continued research with scientific as well as technical development and innovations. Among the bacterial diseases, hemorrhagic septicaemia is the most widespread diseases caused by Gram-negative bacteria of the genera *Vibrio*, *Pseudomonas* and *Aeromonas*. The present study was made to assess the effects of *Adbatoda vasica*, *Chromolaena odorata*, and *Clitoria ternatea* leaves extracts on growth performance, muscle biochemical composition, amino acids and fatty acids profile of the ornamental fish *Danio rerio*. *A. vasica*, *C. odorata* and *C. ternatea* were extracted using ethyl acetate and supplemented with the basal diet each at 400mg kg<sup>-1</sup>. The above said immunostimulants were fed to the ornamental fish *Danio rerio*. The *Danio rerio* fed with the three different types of immunostimulants extract showed significant improvement in survival, growth and muscle biochemical composition. The Leucocyte count and the profile of amino acids and fatty acids showed insignificant (P> 0.05) alteration after it is fed with immunostimulants supplemented diets. Antibacterial activity against *A. hydrophila* and *P. aeruginosa* was found to be high in *Chromolaena odorata*, followed by the *A. vasica* and *C. ternatea*. It showed that the better result was found in *C. odorata* supplemented diets followed by the *A. vasica* and *Clitoria ternatea*. Hence this study suggest that the *A. vasica*, *C. odorata*, and *C. ternatea* can be supplemented for regulating better production and survival of *D. rerio* in ornamental fish production.

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#### 5.4. The study of expression of morpho-physiological and quality traits under drought stress in bread wheat

[Paper submitted for student award competition during 2017]

Wheat is an important cereal crop grown worldwide and wheat quality becomes a major target in wheat breeding program as it decides the various end uses. The abiotic stresses like drought and heat can potentially affect wheat quality. A set of hundred bread wheat genotypes were evaluated in alpha lattice design with two replications under irrigated and water stress conditions during *rabi* 2014-15 and *rabi* 2015-16 to assess the extent of effect of the drought stress on quality traits in different genetic backgrounds and to know the responses of morpho-physiological, yield and yield attributing and quality traits to drought stress conditions. The different drought tolerance indices were calculated based on grain yield under drought (Ys) and irrigated (Yp) conditions. The protein content and sedimentation value was substantially altered. This explains the wide variation in quality of wheat due to strong differences in terms of year conditions. Prolonged drought reduced grain yield, indirectly by reduced performance of sensitive traits *viz.*, thousand grain weight, number of productive tillers, relative water content and leaf waxiness. The indices *viz.*, SSI, STI, MP, TOL and YSI can be used as the most suitable indicators for screening drought tolerant genotypes. The genotypes *viz.*, HD 2967, HUW 689, BAXTER and QLD 68 with high protein content (%) and sedimentation value (ml) with average grain yield (kg/ha) were promising. Thus identified trait specific drought tolerant genotypes could be the source of donors for the improvement of quality traits under drought stress.

**B. A. Veeresha<sup>1,\*</sup>, V. Rudra naik<sup>2</sup>, S. B. Suma<sup>3</sup>, S. A. Desai<sup>4</sup> and M. B. Chetti<sup>5</sup>**

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<sup>2</sup>AICRP on Wheat, MARS, UAS, Dharwad, Karnataka

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<sup>5</sup>Indian Council of Agricultural Research, New Delhi

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#### 5.5. Inoculation with selected microbial consortia not only enhances growth and yield of *Withania somnifera* but also reduces fertilizer application by 25% under field conditions

[Paper submitted for student award competition during 2017]

*Withania somnifera* also known as Ashwagandha is an important medicinal plant used in ayurveda as an important rejuvenator and for treatment of various ailments. The roots are rich in withanolides, which is the active constituent of this medicinal plant. Earlier pot culture studies indicated that *Bacillus licheniformis* (Bl) to be the best PGPR and *Aculospora laevis* (Al) to be the best AM fungus and the consortium consisting of both (Bl+Al) is best for inoculating *W. somnifera* under glasshouse conditions. These pot culture experiments were followed by field experiment to validate the results of pot culture studies and to find out the possibility of reducing the amount of chemical fertilizer application through the inoculation of selected microbial consortia. The five treatments for the field experiment were 1) Control 2) Microbial consortia (MC) of *B. licheniformis* + *A. laevis* 3) MC+50%NPK 4) MC+75%NPK 5) 100% NPK (recommended level of NPK fertilizers for this crop. The results brought out that the plant growth, dry weight, and root yield in MC+75% was significantly high compared to control and was on par with 100%NPK treatment which suggested that the fertilizer application in *W. somnifera* can be reduced by 25% when applied along with the selected microbial consortia. Tracking of the inoculated PGPR in the rhizosphere soil in the field experiment was also done using molecular techniques by using species specific primer for *B. licheniformis* (BL1-FP and BL1-RP) which indicated the presence of the inoculated organism in the rhizosphere soil.

**Anuroopa, N<sup>1,2</sup>, Bagyaraj, D. J.<sup>3</sup>, Abhishek Bagela<sup>4</sup> and Prakash Rao<sup>5</sup>**

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## 5.6. L-Ascorbic acid and $\alpha$ -Tocopherol reduces arsenic trioxide induced toxicity via modulation of Nrf2 and Bcl2 transcription factors in change liver cells

[Paper submitted for student award competition during 2017]

Arsenic trioxide ( $As_2O_3$ ), the trivalent form of arsenic, is used in a number of traditional Chinese remedies. It is reported as an extremely powerful chemotherapeutic agent against acute promyelocytic leukemia (APL), a malignant disorder of the white blood cells; characterised by promyelocytic leukemia-retinoic acid receptor  $\alpha$ -(PML-RAR  $\alpha$ ) fusion gene (Montesinos *et al.*, 2011).  $As_2O_3$  causes apoptosis mainly by the generation of reactive oxygen species (ROS) and oxidative stress (Baysan *et al.*, 2007). ROS can damage the cellular machineries and can alter cellular signal transduction such as the activation of transcription factors, the changes of gene expression and induction of apoptosis (Pan *et al.*, 2009). Activation of Nrf2 (Nuclear factor erythroid 2-related factor 2) pathway composes a defence response that promotes cell survival and has proved to be beneficial in reducing arsenic-induced toxicity (Wang *et al.*, 2007). Some of the apoptotic effects of arsenic are attributed to its ability to cause the collapse of the inner mitochondrial trans membrane potential and release of cytochrome c (Woo *et al.*, 2004), the down regulation of Bcl2 (B-cell lymphoma 2) and the activation of caspase, which ultimately lead to cell death (Miller *et al.*, 2002). Recently studies showed that the stabilization of Nrf2 in the nucleus augmented the levels of Bcl-2 (Calvert *et al.*, 2009).

Liver is one of the important target organs severely injured by  $As_2O_3$ . Our previous studies showed the potential of natural and dietary supplements to prevent and mitigate arsenic induced toxicity in liver (Mathews *et al.*, 2012; Mathews *et al.*, 2014). Antioxidant vitamins such as L-Ascorbic acid (L-AA) and  $\alpha$ -Tocopherol ( $\alpha$ -TOC) have been reported to reduce the ROS levels and ROS induced damages. Ascorbic acid is the most widely cited form of water soluble antioxidant that prevent oxidative damage to the cell membrane induced by radicals in an aqueous environment (Li *et al.*, 2001). It is effective in the prevention of cancer and has shown protection against DNA damage through the neutralization of free radicals (Lee *et al.*, 2003).  $\alpha$ -Tocopherol is a major lipid soluble chain termination antioxidant which helps in scavenging a wide array of ROS, peroxy and alkoxy radicals and protects the membrane fatty acids from lipid peroxidation (Traber *et al.*, 2007). Both these antioxidants can act synergistically against ROS in a cell. The current study investigated the role of Nrf2 in control of antiapoptotic protein Bcl-2 expression with its contribution to cell survival thereby evaluating the protective efficacy of antioxidant vitamins against  $As_2O_3$  induced hepatotoxicity using Chang liver cells as an *in vitro* model.

**R.C. Vineetha,\* V. Archana, P. Binu, P. Arathi and R. Harikumar Nair**

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## 6. Awards, Recognitions, Honors received by members of NABS / Activities of the members

### 6.1. Awards, Recognitions and Honors

Congratulations to all the NABSians who received awards and recognition from various institutions and organizations in the country and outside during 2018-19.

#### Name of Member

#### Name of Award / Recognition received

#### A. Awards and recognitions received from other organizations

- |               |  |
|---------------|--|
| Anandaraj, M. | ■ Appointed as RAC member for ICAR-CTCRI and ICAR-NIBSM for three years.                           |
| Dinesh, R.    | ■ Received NAAS Recognition award in the field of Soil, water and Environmental Sciences.          |
| Ramaswamy, G. | ■ Nominated as Advisor for "Prof. Dhanapalan College of Arts & Science, OMR, Kelambakkam, Chennai. |

- Renu Agrawal
  - Nominated as Expert Member in two National Committees of Ministry of Science and Technology (DST) Government of India for three years (2019-2022)-(i) Technical Interventions for addressing Social Needs (TIASN) (ii) Scheme for Young Scientists and Technologists (SYST)
- Reshma Ayswaria
  - Awarded Junior Research Fellow-DBT FOLDSCOPE PROJECT
- Swamiappan, M.
  - Conferred with "Eminent Philatelist" Award by Department of Posts, Madurai division
- Usha Rani, P.
  - Received Eco-friendly Pest Management Award by BIOCICON-2019

## 6.2. Activities of NABAS-ians

### **Dr. M. Anandaraj**

- Participated in CHAI International Conference held at GB Pant University of Agriculture and Technology during 27-30 May 2019 and presented an invited paper besides chairing a session.
- Participated in All India Coordinated workshop on Biological control at Anand Agricultural University, Anand during 6-7 June 2019 as an expert and chaired a session.

### **Dr. V.A. Parthasarathy**

- As Chairman of RAC, ICAR-Directorate Of Onion And Garlic Research (DOGR), Rajgurunagar, Pune, Maharashtra conducted the RAC on 2, 3 May 2019.
- As Chairman of RAC, National Research Centre for Banana, Tiruchirappalli, Tamil Nadu conducted the RAC on 1, July 2019.

### **Dr. Kirti Singh**

- Presided over the Inaugural Session of XXXVII Annual Group Meeting of All India Coordinated Research Project on Vegetable Crops at Tamil Nadu Agricultural University, Coimbatore on 22 June 2019 and also chaired a session on 23 June.
- Delivered convocation address, as Chief Guest during the convocation of Tamil Nadu Agricultural University, Coimbatore on 26 February 2019.

### **Dr. K.V. Peter**

- Chaired Technical Sessions of Thirteenth Noni Search 2019 organized at CAS in Botany, Guindy Campus, University of Madras, Chennai from 23 to 24 March 2019.

### **Dr. P. Rethinam**

- Delivered Keynote address during Oil Palm Industry Session of the International Symposium on Agriculture and Environment (ISAE 2019), Faculty of Agriculture, University of Ruhuna, Sri Lanka, on 28th February, 2019. He also delivered a speech on "Prospects and Importance of Oil Palm Cultivation and Expansion in South Asia".
- Participated and delivered Guest of Honour Address at the Inaugural Session and Presided over at the Plenary Session and delivered concluding remarks. He also Chaired a Technical Session at 23 Plantation Crops Symposium on Climate Resilient Technologies for Sustainability of Planation Crops held at Chikkamagalluru 6-8 March 2019 organized by Central Coffee Research Institute
- Was the Guest of Honor at XXVIII Annual Group Meeting of ICAR-All India Co-ordinated Research Project on Palms held at TNAU on 06-60-2019 and delivered speech on palms at Inaugural Session and gave concluding remarks at Plenary Session on 8<sup>th</sup> June, 2019.
- Delivered keynote / plenary lecture on "Innovations in production and value chain management of plantation crops" and also Chaired Technical Session-9 on Innovations and New Paradigm in Nutrient Management for Effective Value Chain at the International Conference, organized at GBPUA&T, Pantnagar, Uttarakhand from 28-31st May 2019.

### **Dr. D. P. Ray**

- Delivered Key note address XXXVII Annual Group Meeting of All India Coordinated Research Project on Vegetable Crops at Tamil Nadu Agricultural University, Coimbatore on 22 June 2019.
- Chaired Technical Sessions of Thirteenth Noni Search 2019 organized at CAS in Botany, Guindy Campus, University of Madras, Chennai from 23 to 24 March 2019

## 7. An appeal to contribute for Corpus Fund

Corpus Fund for Prof. S. Kannaiyan Memorial Award is being mobilized. NABS thankfully acknowledge the contributions made by members to Prof. S. Kannaiyan Memorial Corpus Fund [vide list below- continuation]

S.No.	Name of contributor	Amount (Rs.)	S.No.	Name of contributor	Amount (Rs.)
71	Subramanian, M.	2000.00	72	Anandraraj, M.	10000.00

We earnestly appeal to all the rest of the Life members, NABS Fellows / Associate Fellows, Corporate Life Members, Corporate Fellows, Awardees of NABS and well-wishers to contribute to this noble cause. The Fund shall be transferred on line to the Savings Account of **National Academy of Biological Sciences**. [Vide details for online transfer in item 8 of NL]

## 7a. An appeal to contribute for Printing of NABS-Book

The members of NABS were requested to contribute to defray the expenses incurred on printing the book. Many members have responded. The contribution by members is listed. The contribution may please be transferred on line to the Savings Account of **National Academy of Biological Sciences**. [vide list below-] [Vide details for online transfer in item 8 of NL].

S.No.	Name of contributor	Amount (Rs.)	S.No.	Name of contributor	Amount (Rs.)
1	Parthasarathy, V.A.	5000.00	2	Marimuthu, T.	2000.00

## 8. Enroll yourself as a member and be a part of NABS

### Types of Membership available (one time payment)

A. Life Member	: ₹ 5,000/- or US\$ 200/-
b. Provisional Life Membership	: ₹ 5,000/- or US\$ 200/-
c. Corporate Life Member	: ₹ 10,000/- or US\$ 400/-
D. Corporate Fellow	: ₹ 1,00,000/- or US\$ 4000/-

- Duly filled membership form shall be sent as Secretary NABS in WORD format by E-mail to [secretarynabs@gmail.com](mailto:secretarynabs@gmail.com)
- The prescribed membership fee shall be transferred on line

### Account details of National Academy of Biological Sciences

Name of the account holder : National Academy of Biological Sciences  
Account number : **10496978637**  
Type of account : Savings Account  
Name of Bank : State Bank of India, Valmikinagar Branch, Thiruvannamiyur, Chennai - 600 041  
Branch code / IFSC code : Branch code: 11721 - IFSC code: SBIN0011721

### Down load your application from [www.nabsindia.org](http://www.nabsindia.org)

#### Address for all correspondences

Prof. T. Marimuthu, Ph.D., FNABS., FISNS.  
Secretary, NABS  
NABS-Secretariat, Room No. 209, Second Floor, CAS in Botany, University of Madras, Guindy Campus, Chennai - 600 025.  
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#### Disclaimer

The authors are responsible for the information related to Research notes and short communications of this issue

#### Published by

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On behalf of National Academy of Biological Sciences

#### An appeal to members of NABS

Kindly inform change of address including phone numbers and E-mail to the Secretary, NABS by E-mail ([secretarynabs@gmail.com](mailto:secretarynabs@gmail.com))

Printed and circulated to members as E-copy on 14 September 2019