



ISNS News

International Society for Noni Science

Half Yearly Publication of the Society

Volume 3 No. 2

(For Private Circulation Only)

July 2014

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Contents

1. From the Desk of the President 1
2. Message from Vice - President 2
3. Research highlights on Noni 2
4. Awards and Recognitions received by members 4
5. Publications 5
6. News and Events 6
7. ISNS Members' Participation in Meetings *etc.* 7
8. Forth Coming Events 7
9. Enroll yourself as a member of ISNS 8

From the Desk of the President



Dear Members,

Divine Noni greetings.

I am happy to note that ever since the ISNS News was started, one could see the improvements in terms of its contents and quality. Short communications on scientific information on noni could reach the readers through ISNS News so that the wellness characters of Noni could be understood by each and everyone who uses Noni. The patronage to ISNS is increasing every

year and as on date the number of life members of ISNS touched 868. Our goal is to enroll at least 1000 Life Members by end of 2014 for which I seek your active support in enrolling new members.

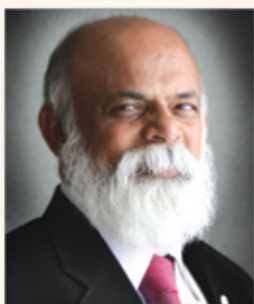
Further, Ninth Noni Search 2014 with the theme "Noni for Everyone" is being organized by ISNS and WNRF in collaboration with ICAR Research Complex for Goa and Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Maharashtra on 27 and 28 September 2014 at International Centre, Goa. This is the second National symposium on Noni being organized in collaboration with institutions engaged in agricultural and allied research. This kind of collaboration will go a long way to explore the potential of research and development activities on this wonder plant, *Morinda citrifolia* L. Those who are interested in Health, Wealth and Happiness are welcome to participate in the two day symposium at Goa.

I also welcome information from you as member of ISNS for the next ISNS News. Suggestions from the readers are invited to improve the content and quality of ISNS News so that the science of Noni is well understood by everyone.

Kirti Singh
(Kirti Singh)

President, International Society for Noni Science

2. Message from Vice - President



The year 2014 is witnessed by sea of changes in areas of Noni research and development activities including marketing of Noni. The willing cooperation and collaboration extended by Universities and research organizations to organize Noni symposia indicates the interest in Noni spreads to scientific communities at greater speed. Thanks to the President, ISNS who is very keen to promote wellness through Noni.

We are moving forward with renewed energy and conviction to spread the awareness of wellness to 1000 million people by 2020. By active cooperation of research organization the wellness movement will be geared up with much more momentum. I could visualize that ISNS could be, in the near future, an excellent platform to promote sciences of wellness through Noni. I wish all the Life Members and Office Bearers live a life of wellness.

Love You. Thank You.



(P. I. Peter)
Vice-President, International Society for Noni Science
Chairman, Noni BioTech, Chennai, &
President, World Wellness Organization

3. Research Highlights on Noni

i. Organic way of increasing the shelf life of Noni fruits

Aloe vera gel coating the harvested fruits reduced or retarded the change in colour development, softening of fruit tissue, carbohydrate, protein, antioxidant and phenolic contents of fruits. The reduction of in the physiological activities of fruits indicated the ability of A. vera gel coating to modify the respiration rate and delay the ripening process thereby extending the shelf life and maintaining the quality of harvested noni fruits.

D. R. Singh
Central Agricultural Research Institute, Port Blair, A &
N Islands, India, E-mail: drsinghbort66@gmail.com

ii. Leaves of *Morinda citrifolia* L. has pesticidal properties

Morinda citrifolia leaf extract and the commercial bio products were tested for its pesticidal activity against two species of mealy bugs namely *Planococcus citri* and *Maconellicoccus hirsutus*. Among the different solvent extracts of *Morinda citrifolia* leaves, the highest nymphal mortality was observed in ethyl acetate extract. In case of the other biologicals tested, neem treatment was effective against *Maconellicoccus hirsutus* with Lc50 value of 1899.99 ppm and LC90 value of 4178.01 ppm. Among the

combined application, synergistic activity of *Metarbizium anisopliae* + Pon-neem has shown higher mortality of 89.00 ± 7.55 over the other treatments. Hence, *Metarbizium anisopliae* + Pon neem can serve as an ecofriendly pest control strategy against the sucking pest. This study is also the first report on the pesticidal activity of *Morinda citrifolia* against mealy bug.

S. P. Shanthakumar, V. R. Prabavathy and
S. Malarvannan, M. S. Swaminathan Research
Foundation, Chennai - 600 113
E-mail: spsanthakumar@gmail.com;
malar@mssrf.res.in

iii. Phytochemistry of Noni

Analysis revealed significant disparity in phytochemical contents among various parts of Noni. Among anthraquinone derivatives, polydatin was the most dominant in branch, flower, immature fruit, pulp and root followed by phytochemicals present in bark, branch, heartwood and root and the lowest were rhein and resveratrol present only in roots. Except anthraglycoside B, all the anthraquinone derivatives were present in the root, indicating that roots are rich in anthraquinones. Among the carotenoid derivatives, - cryptoxanthin was reported in bark, branches, heartwood, flower, immature fruit, leaf,

root and stem followed by zeaxanthin present in bark, flower, heart wood, mature fruit, leaf and pulp and the lowest carotenoid derivative was found to be - carotene present only in stem. Rutin was the dominant flavonol derivative present in heartwood, pulp, root and stem followed by quercetin and myrecitin in two parts, where the former was present in bark and root and the latter was present in pulp and roots. Gallic acid was the major phenolic acid derivative present in bark, branch, flower, heartwood, mature fruit, leaf, stem, pulp and root) followed by epicatechin present in five parts (bark, heartwood, leaf, root and stem and the lowest phenolic acid derivative were catechin, naringin and syringic acid present only in heartwood. Delpindin-3 glucoside was the major anthocyanin derivative present in leaf, pulp, root and stem followed by cyanidine-3 glucoside, putunidin-3-glucoside present in root and malvidin-3-glucoside present in pulp. Results indicated that immature fruit is not ideal for therapeutic applications as only two phytochemical substances (polydatin and - cryptoxanthin) were present. The present study is significant as it delineates the precise amount of phytochemicals in eight different plant parts which facilitates easier applications in the targeted study as well as in analyzing its therapeutic properties of this intriguing divine plant.

*D. R. Singh, Shrawan Singh and V. Shajeeda Banu
Division of Horticulture and Forestry, Central
Agricultural Research Institute
Port Blair- 744 101, Andaman and Nicobar Islands.*

iv. Effect of Divine Noni Gold on glycemic indices and liver function test

The effect of Divine Noni Gold on the glucose profile in type 2 diabetic patients was investigated. Comparisons between glycemic indices and liver function tests in the studied groups before and after intervention with Divine Noni Gold was made.

The average fasting blood sugar level in the Noni group at the beginning of the study was 191.59 ± 27.27 mg/dl which decreased to 172.77 ± 10.42 mg/dl after 4 weeks of oral intake of Divine Noni Gold. The average fasting blood glucose level in the placebo group at the baseline of the study was 187.45 ± 16.25 which decreased slightly to 183.78 ± 25.95 after the 4 weeks of placebo treatment. The results have shown that the Divine Noni Gold treatment notably decreased the fasting blood glucose and HbA1c in diabetic patients at the end of the study. In the present study, fasting insulin levels in the Noni group were considerably lowered compared to placebo group. The hypoglycemic

effect in the test group might be due to the improved insulin sensitivity by the Noni fruit juice.

Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin caused by the degeneration or hypo activity of the beta cells of the pancreas which resulted in the rise of extra cellular glucose level. Xeronine the major compound present in the Noni fruit juice plays a vital role in lowering blood sugar level. Xeronine combining with insulin helps more glucose combustion (oxidation) in peripheral tissues and also helps to enhance the cellular permeability to glucose leading to the reduction of extra cellular glucose level.

Hemoglobin A1c (HbA1c) is a minor component of hemoglobin to which glucose is bound. It is also referred as glycosylated hemoglobin. HbA1c levels are routinely measured in monitoring of people with diabetes. HbA1c levels were depending on the blood glucose concentration. Levels of HbA1c are not influenced by daily fluctuations in the blood glucose concentration but reflect the average glucose levels over prior period of six to eight weeks. In the present study, the HbA1c level at the beginning was 8.22 ± 0.51 in the Noni group which decreased to 7.75 ± 0.50 after the 4 weeks of intervention with the Noni juice. This result showed that the intervention with Noni juice could be helpful in good control of hyperglycemic condition. Whereas in the placebo group the levels of HbA1c was found to be 8.14 ± 0.68 at the beginning and at the end of the study it was 8.27 ± 0.40 .

Treatment with Noni fruit juice for 4 weeks also decreased the blood levels of AST (Aspartate aminotransferase) and ALT (Alanine aminotransferase). AST and ALT activities are commonly measured to monitor liver damage. A mild or elevated activity of AST indicates liver injury or myocardial infarction (Feldman *et al.*, 2000; Crook, 2006). In the present study, it was observed that the levels of the AST decreased from 28.53 ± 5.64 to 26.25 ± 3.56 after the intervention. Likewise, the ALT enzyme activity was also found to be lowered from 23.21 ± 6.89 to 21.50 ± 5.85 . The results of the clinical biochemistry analyses, showed that Noni fruit juice did not bring any damage to liver function of the patients. Whereas no such decreased activity was found in these enzyme levels in the placebo treated group.

*S. Ramesh, R. Muthubalaji, R. Elangomathavan,
S. Patharajan
PRIST University, Thanjavur 614904, Tamil Nadu, India
E-mail : Marineramesh2020@gmail.com*

4. Awards and Recognition received by members

Congratulations to members who made a land mark.

Padma Awards

Mahadevappa, M.



- Recipient of Padma Bhushan award for the year 2014 by Government of India for his outstanding contributions in developing hybrid rice varieties. He is a rice breeder of repute and has several improved varieties and hybrids to his credit.

Brahma Singh



- Recipient of Padma Shree award for the year 2014 by Government of India for his contribution to greening of Leh valley, developing appropriate agro-technologies; Promotion and Development of Protected Cultivation Technologies in the country; exploiting nutrition, pharmacological and environment protection potential of Seabuckthorn in Cold deserts of the Country; promoting R&D on medicinal plants and establishment of herbal gardens at Rashtrapati Bhawan and in high altitudes of the country.

Other Awards

Amit Baran Sharangi

- FULBRIGHT-Nehru Visiting Lecturer (for teaching in the Louisiana State University, USA 2012-13 by INSA-Royal Society of Edinburgh).
- ACHIEVERS Award 2013 by SADHNA (Society for the Advancement of Human & Nature, Solan, HP).
- Member, NASI (in Biological Sciences) 2014 by The National Academy of Science (India).

Arun Kumar Singh

- Fellow, Indian Society of Vegetable Science- 2014 by Indian Society of Vegetable Science, Varanasi.

Balraj Singh

- Fellow, Indian Society of Vegetable Science- 2014 by Indian Society of Vegetable Science, Varanasi.

Bijendra Singh

- First Dr. Biswajeet Choudhury Memorial Award for outstanding vegetable scientist 2014 by Indian Society of Vegetable Science.

Hanchinal, R. R.

- NABS- Life Time Achievement Award for 2013 by National Academy of Biological Sciences, Chennai.
- Became a member of Research Advisory Board of World Noni Research Foundation w.e.f. August 2014.

Lallan Singh

- Fellow, Indian Society of Vegetable Science- 2013 by Indian Society of Vegetable Science, Varanasi.

Mehta, A. K.	■ Fellow, Indian Society of Vegetable Science- 2014 by Indian Society of Vegetable Science, Varanasi.
Naik. P. S.	■ Honorary Fellow of National Academy of Biological Sciences for 2013, Chennai.
Omveer Singh	■ Fellow, Indian Society of Vegetable Science- 2013 by Indian Society of Vegetable Science, Varanasi.
Pandey, A. K.	■ Fellow, Indian Society of Vegetable Science- 2014 by Indian Society of Vegetable Science, Varanasi.
Peter, P. I.	■ Prof. S. Kannaiyan Memorial Award for 2014 by National Academy of Biological Sciences, Chennai.
Pradeep K. Sharma	■ Took over as Vice-Chancellor, Sher-e-Kashmir University of Agricultural Sciences Technology of Jammu on 10 March 2014.
Raj Narayan	■ Best Field Award for 2013-2014 for Integrated Farming system developed by KVK, ICAR Research Complex for Goa.
Rethinam, P.	■ Fellow, Indian Society of Vegetable Science- 2013 by Indian Society of Vegetable Science, Varanasi. ■ Patron, PEEKAY Institute of Climate Resilient Agriculture, Madathil Parambil, Naduvath Nagar, P.O. Alappuzha 688 526, Kerala.
Singh, D. R.	■ Fellow, National Academy of Biological Sciences for 2013, Chennai.

5. Publications

Books

Peter, K.V. (Ed.) 2014. Climate resilient crops for the future. New India Publishing Agency, New Delhi. P.431.

Dinesh, M. R. and Peter, K. V. (Eds.) 2014. Fruit breeding. New India Publishing Agency, New Delhi. p. 340.

Research articles

Uday P. Pratap, Hannah P. Priyanka, Fariya Yasmine and Srinivasan ThyagaRajan. 2012. Effect of *Morinda citrifolia* L. (Noni) fruit juice on proliferation and antioxidant enzymes activities of splenic lymphocytes isolated from young male Wistar rats. *International Journal of Noni Research*, 7(2):1-14.

Chitra Devi Pandey Veena Gupta Lalit Arya and Anjali Kak. 2012. Conservation and use of *Morinda* genetic resources. *International Journal of Noni Research*, 7(2):15-26.

Ramamoorthy, K., Srimathi, P., Arunkumar, R. And Venudevan, B. 2012. Influence of seed priming with Noni fruit extract on seed quality characters of vegetables crops. *International Journal of Noni Research*, 7(2):27-35.

Shrwan Singh, D.R. Singh and Shajeeda Banu. 2012. Phytochemistry of Noni (*Morinda citrifolia* L.) Fruits during fruit development stages. *International Journal of Noni Research*, 7(2):36-42.

Ramesh, S., Muthubalaji, R., Rajeswari, A., Elangomathavan, R. and Patharajan, S. 2012. Effect of maturity stage on in vitro antioxidant capacity of *Morinda citrifolia* L. fruits. *International Journal of Noni Research*, 7(2):43-53.

Vidhu Sankar Babu, K. S. Vidya, Raghavendra Upadhya, B. S. Satish Rao and Kapaettu Satyamoorthy. 2012. Time reliant functional assays substantiate chemopreventive and radioprotective prospective of *Morinda citrifolia* L. (Noni) fruit extract. *International Journal of Noni Research*, 7(2):54-68.

Ramkumar, D., Mathivanan, N., Sithanantham, S., Venkatachalam, A. and Marimuthu, T. 2012. Investigation on dry and soft fruit rots in *Morinda citrifolia* L. (Noni). *International Journal of Noni Research*, 7(2):69-75.

Shanthakumar, S. P., Prabavathy, V. R. and Malavannan, S. 2012. Laboratory evaluation of individual and synergistic action of botanicals and microbials against two mealy bug species, *Planococcus citri* and *Maconellicoccus hirsutus*. *International Journal of Noni Research*, 7(2):76-88.

Chengappa, P.G., Pradeep Babu and Vijayalakshmi Dega. 2012. Expanding the markets for Noni Products. *International Journal of Noni Research*, 7(2):89-95.

6. News and Events

Obituary

Dr. Saiyed Asif Hussain Abidi, life member of ISNS and former Director / Vice-Chancellor, Central Institute of Fisheries Education (Deemed University), Mumbai attained eternal bliss on 11 July 2014 around 05.30pm.



The President, officer bearers and members of ISNS deeply mourn the sudden demise of Dr. Abidi and convey their heartfelt condolences to the grieved family. May his soul rest in peace.

Dr. Saiyed Asif Husian Abidi was born in Baragaon, Janupur, Uttar Pradesh, India on 4 April 1940. He is basically a fishery scientist of international repute; held several coveted positions like Director / Vice-Chancellor, Central Institute of Fisheries Education (Deemed University), Mumbai (1996-99) and Member (Animal Sciences), Agricultural Scientists Recruitment Board (1999-2005); Senior Advisor, Department of Ocean Development, Govt. of India, New Delhi (1987-95); Director of Fisheries, Fisheries Division Ministry of Natural Resources & Tourism, Dar-es-Salaam, United Republic of Tanzania (1970-77); Deputy Advisor, Council of Scientific & Industrial Research, New Delhi (1983).

7. ISNS Members' Participation in Meetings / Seminars / Symposia

Rethinam, P.

- Participated in the Knowledge Sharing Workshop on Tropical Fruits-Banana, Mango & Pomegranate for value chain management & farm profitability; Organised by CHAI at Coimbatore on 1 & 2 March 2014 as President CHAI South Zone.
- Chairman of RAC attended third Annual Meeting of Sixth Research Advisory Committee of Directorate of Cashew Research, at Puttur, Karnataka on 7 & 8 May 2014.
- Participated in the Horticultural conference from 28 to 30 May at NAU, Navsari, Gujarat as Guest of Honour at the Inaugural Session and Chairing a technical Session and presented an invited paper on 'Technological challenges for climate smart production of oil palm'.

Marimuthu, T.

- As Secretary, National Academy of Biological Sciences, Chennai, organized National Seminar on 'Biodiversity Conservation: Status, Future and Way Forward' in collaboration with Department of Biotechnology, KS Rangasamy College of Technology, Tiruchengode, Tamil Nadu for two days from 19-20 July 2014 at KS Rangasamy College of Technology, Tiruchengode. The following ISNS members participated and presented papers / chaired co chaired technical sessions in the seminar:

Kirti Singh

- Chaired the technical session-Biodiversity hot spots and conservation: Indian legislations, policies, directions and custodians of conservation

Brahma Singh

- Co-chaired the technical session- Biodiversity hot spots and conservation: Indian legislations, policies, directions and custodians of conservation and presented a lead paper 'Plant diversity and its conservation in cold desert of India'

Mathivanan, N.

- Co-chaired the technical session-Biodiversity of Natural Resources-Microbial diversity

Bijendra Singh

- Presented a paper on 'Vegetable diversity in India'

Peter, K. V.

- Presented a paper on 'Biodiversity of vegetables and spices'

Naik, P. S.

- Chaired the technical session- Biotechnological Tools for Analysis and Conservation of Biodiversity

8. Forth Coming Events

- Ninth Noni Search 2014 with the theme "Noni for Everyone" is being organized by World Noni Research Foundation and International Society for Noni Science in collaboration with ICAR Research Complex for Goa and Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Maharashtra on 27 and 28 September, 2014 at ICAR Research Complex, Goa.
- 16th Research Advisory Board Meeting of WNRF is scheduled on 26 September 2014 at Goa.
- Task Force constituted by Protection of Plant Varieties and Farmers' Rights Authority, Ministry of Agriculture, GOI, New Delhi to develop DUS (Distinctiveness, Uniformity, Stability) test guidelines for Noni (*Morinda citrifolia* L.) with Dr.Kirti Singh, Chairperson, WNRF as its Chairman meets on 8 & 9 September 2014 at WNRF, Chennai.

9. Enroll yourself as a member of International Society for Noni Science and be a part of Wellness movement.

Types of Membership Available

a. Life Membership fee (one time)	:	₹ 5,000/-	or	US\$ 200/-
b. Institutional Membership (renewable)*	:	₹ 3,000/-*	or	US\$ 100/-
c. Sustaining Membership (one time)	:	₹ 25,000/-	or	US\$ 1,000/-
d. Corporate Membership fee	:	₹ 1,00,000/-	or	US\$ 2,000/-
e. Corporate Fellow	:	₹ 2,00,000/-	or	US\$ 4,000/-

* Renewable every year

Details of Payment : ₹ / US\$ either as Cash or DD/ Multicity Cheque drawn in favor of "International Society for Noni Science" payable at Chennai.

E-transfer to: Acct. No. 0942101030222 of ISNS

Other details of the Bank : IFSC code No: CNRB0000942

Bank: Canara Bank, Kasturiba nagar Branch, Adyar, Chennai – 600 020

You can down load your application form from the website: www.isns.in

Mail your filled in application to :

Prof. T. Marimuthu, Ph.D., FNABS

Treasurer

ISNS, World Noni Research Foundation

12, Rajiv Gandhi Road, Perungudi Chennai - 600 096, India

E-mail: intl.sns2010@gmail.com

Disclaimer

The information published in this issue are based on research studies on Noni and meant for educational purpose only.

Published by

Prof. P. I. Peter, 12, Rajiv Gandhi Road, Perungudi, Chennai - 600 096, India
on behalf of International Society for Noni Science.



International Society for Noni Science (ISNS)

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APPLICATION FOR MEMBERSHIP

1.	Name in BLOCK Letters	:		
2.	Date of birth <input type="text"/>		Sex Male <input type="checkbox"/> Female <input type="checkbox"/>	
3.	Highest qualification	:		
4.	Present address with PIN		Permanent address with PIN	
a.	Other details		Office	Residence
	Phone No. with country code :			
	Fax with country code :			
	Mobile :			
	E-mail :			
5.	Declaration by the Applicant			
I am willing to become a Member of ISNS as shown below and abide by the rules and regulations of the Society and serve for the cause of ISNS (Tick mark against the appropriate row of column- 06)				
6.	a. Life Membership fee (one time)	:	₹5000/- or US\$ 250/-	
	b. Institutional Membership (renewable)	:	₹3000/- or US\$ 150/-	
	c. Sustaining Membership fee (one time)	:	₹25,000/- or US\$ 1250/-	
	d. Corporate Membership fee	:	₹1,00,000/- or US\$ 3000/-	
	e. Corporate Fellow	:	₹2,00,000/- or US\$ 6000/-	
7.	Details of Payment - Rs. / US\$ Cash / Cheque / DD drawn in favor of "International Society for Noni Science" payable at Chennai E-transfer to: Acct. No. 0942101030222 IFSC code No: CNRB0000942 Canara Bank, Kasturiba nagar Branch, Adyar, Chennai – 600 020		₹ (In words)	US\$
a.	DD / Cheque No. & date	:	No.	Date :
b.	Drawee Bank with branch code	:		Br. Code :
8.	Signature of applicant with date	:		
Mail your application To : Prof. T. Marimuthu, Treasurer, ISNS International Society for Noni Science 12, Rajiv Gandhi Road, Perungudi Chennai - 600 096, India E-mail: intl.sns2010@gmail.com		For Office Use only		
		Receipt No. :	Admitted / Not admitted	
		Date :		
		Membership No. :	Secretary / Treasurer, ISNS	

Note : Any change in the present address should invariably be communicated to the Secretary / Treasurer of the Society.