

## **CHAPTER 7**

## **BIBLIOGRAPHY**

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- Abbamondi GR, Tommonaro G, Weyens N, Thijs S, Sillen W, Gkorezis P, Iodice C, Rangel, WM, Nicolaus B, Vangronsveld J (2016).** Plant growth-promoting effects of rhizospheric and endophytic bacteria associated with different tomato cultivars and new tomato hybrids. *Chem. Biol. Technol. Agric* **3**:1.
- Abdallah RAB, Mejdoub-Trabelsi B, Nefzi A, Jabnoun-Khiareddine H, Daamiri Remadi M (2016).** Isolation of Endophytic Bacteria from *Withania somnifera* and Assessment of their Ability to Suppress Fusarium Wilt Disease in Tomato and to Promote Plant Growth. *Journal of Plant Pathology & Microbiology* **7**:5.
- Abi BG, Mohamed SA, Santhi JR (2011).** Antioxidant and antibacterial activity of *achyranthes aspera*: An *in vitro* study. *Der Pharma Chemica*, **3(5)**:255-262.
- Adachi K, Nakatani M, Mochida H (2002).** Isolation of an endophytic diazotroph, *Klebsiella oxytoca*, from sweet potato stems in Japan. *Soil Science and Plant Nutrition* **48**: 889-895.
- Affourtit J, Zehr JP, Paerl HW (2001).** Distribution of nitrogen-fixing microorganisms along the Neuse river estuary, North Carolina. *Microb Ecol* **4**:114–123.
- Afzal I, Shinwari ZK, Iqrar I (2015).** Selective isolation and characterization of agriculturally beneficial endophytic bacteria from wild hemp using canola. *Pak J bot* **47(5)**: 1999-2008.
- Aggarwal A, Tandon S, Singla SK, Tandon C (2010).** Reduction of oxalate-induced renal tubular epithelial (NRK-52E) cell injury and inhibition of calcium oxalate

crystallisation *in vitro* by aqueous extract of *Achyranthes aspera*. *International Journal of Green Pharmacy*. DOI: 10.4103/0973-8258.69173.

**Ahemad M, Khan MS (2010).** Phosphate-solubilizing and plant-growth-promoting *Pseudomonas aeruginosa* PS1 improves green gram performance in quizalafop-p-ethyl and clodinafop amended soil. *Arch. Environ. Contam. Toxicol* **58**:361-372.

**Akbari GA, Arab SM, Alikhani H, Allakdadi I, Arzanesh M (2007).** Isolation and selection of indigenous *Azospirillum* spp. and the IAA of superior strains effects on wheat roots. *World J Agricult. Sci* **3**: 523–529.

**Alam MA, Slahin N, Uddin R, Hasan SMR, Akter R, Kamaluddin M, Faroque A, Alexander BD, Zeeberi DA (1991).** Use of chromazurol S to evaluate siderophore production by rhizosphere bacteria. *Biol Fertil Soils* **2**:39–54. doi: 10.1007/BF00369386.

**Ali S, Charles TC, Glick BR (2014).** Amelioration of high salinity stress damage by plant growth promoting bacterial endophytes that contain ACC deaminase. *Plant Physiol Biochem* **80**:160-167.

**Ali S, Duan J, Charles TC, Glick BR (2014).** A bioinformatics approach to the determination of genes involved in endophytic behavior in *Burkholderia* spp. *J Theor Biol* **343**:193-198.

**Ali L, Khan AL, Hussain J, Al-HarrasiA, Waqas M, Kang SM, Al-Rawahi A, Lee IJ (2016).** Sorokiniol: a new enzymes inhibitory metabolite from fungal endophyte *Bipolaris sorokiniana* LK12. *BMC Microbiology* **16(103)**. DOI 10.1186/s12866-016-0722-7.

**Alqueres SC, Meneses L, Rouws M, Rothballer I, Baldani M, Schmid AH (2013).** The bacterial superoxide dismutase and glutathione reductase are crucial for endophytic

colonization of rice roots by *Gluconacetobacter diazotrophicus* PAL5. *Mol. Plant-Microbe Interact* **26**: 937-945.

**Ambawade MS, Pathade GR (2015).** Production of Indole Acetic Acid (IAA) by *Stenotrophomonas Maltophilia BE25* Isolated from Roots of Banana (*musa spp*). *International Journal of Science and Research (IJSR)* **4(1)**: 2644-2650.

**Andreolla M, LampisaS, Zapparolia G, Angelinib E, Vallini G (2016).** Diversity of bacterial endophytes in 3 and 15 year-old grapevines of *Vitis vinifera* cv. Corvina and their potential for plant growth promotion and phytopathogen control. *Microbiological Research* **183**:42–52.

**Arnow LE (1937).** Colorimetric determination of the components of 3, 4-Dihydroxyphenylalanine tyrosine mixtures. *J Biolog Chem* **118**: 531-537.

**Arshad M, Frankenberger JWT (1993).** Microbial production of plant growth regulators. In: Blaine, F., Metting, Jr. (Eds.), *Soil Microbial Ecology*. Marcel and Dekker, Inc., New York 307–347.

**Asis CA, Adachi K (2003).** Isolation of endophytic diazotroph *Pantoea agglomerans* and nondiazotroph *Enterobacter asburiae* from sweet potato stem in Japan. *Lett Appl Microbiol* **38(8)**:19–23. doi:10.1046/j.1472-765X-2003-01434-x.

**Atlas RM, Bartha R (1998).** Fundamentals and Applications. 4th edition Benjamin Cummings. Publishing Co, Redwood City, CA. *Microbial Ecology*.

**Atlas R, Bartha R (1997).** Microbial Ecology. AddisonWesley Longman, New York, USA. 704.

**Audipudi AV, Allu S, Kumar NP, Chowdappa P (2014).** Plant growth promoting potential of a novel endophytic *curtobacterium* CEG: Isolation, evaluation and formulation. *Annals of Biological Research* **5(5)**:15-21.

**Aziz A, Rahman M, Mondal AK, Muslim T, Rahman A, Quader A (2005).** 3-Acetoxy-6 benzoyloxy apangamide from *Achyranthes aspera*, Dhaka Univ. J Pharm Sci **4**(2): 113-116.

**Bacon CW, Hinton DM. (2006).** Bacterial endophytes: The endophytic niche, its occupants, and its utility. In: Gnanamanickam SS, editor. *Plant-Associated Bacteria*. Springer; Netherlands: 155–194.

**Bacon CW, White JF (2000).** Microbial endophytes, *Marcel Dekker Inc., New York*: 341-388.

**Balachandar D, Sandhiya GS, Sugitha TCK, Kumar K (2006).** Flavonoids and growth hormones influence endophytic colonization and in planta nitrogen fixation by a diazotrophic *Serratia* sp. in rice. *World Journal of Microbiology & Biotechnology* **22**:707-12.

**Baltruschat H, Fodor J, Harrach BD, Niemczk E, Barna B, Gullner G, Janeczko A, Kogel KH, Schäfer P, Schwarczinger I, Zuccaro A, Skoczowski A (2008).** Salt tolerance of barley induced by the root endophyte *Piriformospora indica* is associated with a strong increase in antioxidants. *New Phytol* **180**: 501–510.

**Balunas MJ, Kinghorn AD (2005).** Drug discovery from medicinal plants. *Life Sci.* **78**: 431-441.

**Bar YB, Rogers RD, Wolfram JH and Richman E (1999).** *Pseudomonas cepacia* mediated rock phosphate solubilizing in kaolinite and montmorillonite suspensions. *Soil Science Society of America Journals* **63**: 1703-1708.

**Barbhaiya HB, Rao KK (1985).** Production of pyoverdine, the fluorescent pigment of *Pseudomonas aeruginosa* PA01. *FEMS Microbiol Lett* **27**: 233-235.

**Barraquio Y, Holguin G, Ladha JK (1997).** Isolation of endophytic diazotrophic bacteria from wetland rice. *Plant Soil* **194**, 15–24.

**Bartel B (1997).** Auxin biosynthesis. *Annu. Rev. Plant Physiol. Plant Mol. Biol.* **48**: 49–64.

**Behera BC, Yadav H, Singh SK, Mishra RR, Sethi BK, Dutta SK, Thatoi HN (2017)** Phosphate solubilization and acid phosphatase activity of *Serratia* sp. isolated from mangrove soil of Mahanadi river delta, Odisha, India-NC-ND license. *Genetic Engineering and Biotechnology Journal* **15(1)**. DOI: 10.1016/j.jgeb.2017.01.003.

**Berg G, Hallmann J (2006).** Control of plant pathogenic fungi with bacterial endophytes. *Microbial Root Endophytes* (Schulz BJE, Boyle CJC & Sieber TN, eds). *Springer Verlag, Berlin* 53–69.

**Bhattacharjee RB, Singh A, Mukhopadhyay SN (2008).** Use of nitrogen-fixing bacteria as biofertiliser for non-legumes: prospects and challenges. *Appl Microbiol Biotechnol* **80**:199–209. doi: 10.1007/s00253-008-1567-2.

**Bhattacharyya PN, Jha DK (2012).** Plant growth-promoting rhizobacteria (PGPR): emergence in agriculture. *World J. Microbiol. Biotechnol.* **28**: 1327–1350.

**Bohm MT, Hurek B, Rheinhold-Hurek T (2007).** Witching motility is essential for endophytic rice colonization by the N<sub>2</sub>-fixing endophyte *Azocarbus* sp. strain BH72. *Plant-Microbe Interact* **20**: 526–533.

**Bothe H, Tripp H, Zehr, J (2010).** Unicellular cyanobacteria with a new mode of life: the lack of photosynthetic oxygen evolution allows nitrogen fixation to proceed. *Arch. Microbiol* **192**:783–90.

**Brand WW, Cuvelier ME, Berset C (1995).** Use of free radical method to evaluate antioxidant activity. *Lebensm Wiss Technol* 28(1):25-30.

**Brandl MT and Lindow SE (1996).** Cloning and characterization of a locus encoding an indole pyruvate decarboxylase involved in indole-3-acetic acid synthesis in *Erwinia herbicola*. *Appl Environ Microbiol* 62:4121–4128.

**Bray RH, Kurtz LT (1945).** Determination of total, organic and available forms of phosphorus in soils. *Soil Science* 59:39-45.

**Canter PH, Thomas H, Ernest E (2005).** *Trends Biotechnol* 23:180.

**Carroll GC (1988).** Fungal endophytes in stems and leaves: from latent pathogen to mutualistic symbiont. *Ecology* 69:2-9.

**Chagas JAF, de Oliveira AG, de Oliveira LA, dos Santos GR, Chagas LFB, Lopes AL, da Silva, da luz-costa J (2015).** Production of indole-3-acetic acid by *Bacillus* isolated from different soils. *Bulg. J. Agric. Sci* 21: 282–287.

**Chaiharn M, Lumyong S (2009).** Phosphate solubilization potential and stress tolerance of rhizobacteria from rice soil in Nothern Thailand. *World J. Microbiol. Biotechnol* 25:305-314.

**Chakraborty U, Chakraborty BN, Chakraborty AP (2010).** Influence of *Serratia marcescens* TRS-1 on growth promotion and induction of resistance in *Camellia sinensis* against *Fomes lamaoensis*. *Journal of Plant Interactions* 5 (4): 261-272.

**Chapman HD, Pratt PF (1961).** Methods of analysis for soils, plants and water. Univ. California Berkeley, CA, USA.

**Charyulu GP (1982).** Effect of Apamarga *Achyranthes aspera* Antardhooma Bhasma on cases of Tamaka Shwasa Bronchial Asthma. *Indian Journal of Pharmaceutical Sciences* 44.

**Chaturvedi P, Chaturvedi U, Sanyal B (2002).** Alternative medicine and cancer patients in less developed countries. *The Lancet Oncology* **3(1)**:10.

**Chelius MK, Triplett EW (2000).** Immuno localization of dinitrogenase reductase produced by *Klebsiella pneumoniae* in association with *Zea mays* L. *Appl Environ Microbiol* **66**:783–787.doi: 10.1128/AEM.66.2.783-787.2000.

**Chen YP, Rekha PD, Arun AB, Shen FT, Lai WA, Young CC (2006).** Phosphate solubilizing bacteria from subtropical soil and their tricalcium phosphate solubilizing abilities. *Appl Soil Ecol* **34**:33–41.

**Chhibber S, Gupta A, Sharan R, Gautam V, Ray P (2008).** Putative virulence characteristics of *Stenotrophomonas maltophilia*: a study on clinical isolates. *World J Microbiol Biotechnol* **24**:2819–2825.

**Chimwamurombe, PM, Gronemeyer JL, Reinhold-Hurek B (2016).** Isolation and characterization of culturable seed-associated bacterial endophytes from gnotobiotically grown Marama bean seedlings. *FEMS Microbiology Ecology* **92**.

**Chin YW, Balunas MJ, Chai HB, Kinghorn AD (2006).** AAPS J 8:E239.

**Chowdhury SP, Schmid M, Hartmann A, Tripathi AK (2007).** Identification of diazotrophs in the culturable bacterial community associated with roots of *Lasiurus sardicus* a perennial grass of Thar Desert, India. *Microb. Ecol* **54**:82-90.

**Chung H, Park M, Madhaiyan M, Seshadri S, Song J, Cho H, Sa T (2005).** Isolation and characterization of phosphate solubilizing bacteria from the rhizosphere of crop plants of Korea. *Soil Biology & Biochemistry* **37**: 1970-1974.

**Cocking EC (2003).** Endophytic colonization of plant roots by nitrogen-fixing bacteria. *Plant Soil* **252**:169–175.

**Complant S, Brion D, Nowak J, Clément C, AitBarka E (2005).** Use of plant growth promoting bacteria for biocontrol of plant diseases: principles, mechanisms of action, and future prospects. *Appl. Environ. Microbiol* **71**: 4951–4959.

**Complant S, Clément C & Sessitsch A (2010).** Colonization of plant growth-promoting bacteria in the rhizo- and endosphere of plants: importance, mechanisms involved and future prospects. *Soil Biol Biochem* **42**: 669–678.

**Conrath U (2006).** Priming: getting ready for battle. *Mol. Plant Microbe Interact* **19**:1062–1071.

**Costa JM, Loper JE (1994).** Characterization of siderophore production by the biological-control agent *Enterobacter cloacae*. *Mol. Plant Microbe Interact* **7**: 440–448.

**Crowley DE (2006).** Microbial siderophores in the plant rhizospheric. In: Barton LL and Abadía J (eds) Iron nutrition in plants and rhizospheric microorganisms. *Springer*, *Dordrecht*, 169-198.

**Dalal J, Kulkarni N (2013).** Antagonistic and Plant Growth Promoting Potentials of Indigenous Endophytic Bacteria of Soybean (*Glycine max* (L) Merril). *Current Research in Microbiology and Biotechnology* **1**(2): 62-69.

**Datta M, Banish S, Gupta RK (1982).** Studies on the efficacy of a phytohormone producing Phosphate solubilizing *Bacillusfirmus* in augmenting paddy yield in acid soils of Nagaland. *Plant Soil* **69**:365–373.

**Davies PJ (2004)** Plant Hormones—Biosynthesis, Signal Transduction, Action. Ed 3. Kluwer Academic Publishers, *Dordrecht, The Netherlands* 1–15.

**de Freitas JR, Banerjee MR, Germida JJ (1997)** Phosphate solubilizing rhizobacteria enhance the growth and yield but not phosphorus uptake of canola (*Brassica napus L.*). *Biol Fert Soils* **24**:358–364.

**Dey A (2011).** *Achyranthes aspera L:* phytochemical and pharmacological aspects **9(2)**, July – August 2011; Article-013.

**Di Simine CD, Sayer JA, Gadd GM (1998).** Solubilization of zinc phosphate by a strain of *Pseudomonas fluorescens* isolated from a forest soil. *Biol Fertil Soils* **28**: 87–94.

**Dimkpa CO, Zeng J, McLean JE, Britt DW, Zhan J, Anderson AJ (2012).** Production of indole-3-acetic acid via the indole-3-acetamide pathway in the plant-beneficial bacterium *Pseudomonas chlororaphis* O6 is inhibited by ZnO nanoparticles but enhanced by CuO nanoparticles. *Appl Environ Microbiol* **78**:1404–1410.

**Dimpka C, Svatos A, Merten D, Büchel G and Kothe E (2008).** Hydroxamate siderophore produced by *Streptomyces acidiscibes* E13 bind nickel and promote growth in cowpea (*Vigna unguiculata L.*) under nickel stress. *Can J Microbiol* **54**:163-172.

**Döbereiner J, Reis VM, Paula MA, Olivares F (1993).** Endophytic diazotrophs in sugar cane, cereals and tuber plants. In: Palacios R, Mora J, Newton WE, editors. *New horizons in nitrogen fixation*. Dordrecht: Kluwer: 671–676.

**DoleyP, Jha DK (2015).** Antimicrobial activity of bacterial endophytes from medicinal endemic plant *Garcinia lancifolia Roxb.* *Annals of plant sciences* **4(12)**:1243-1247.

**Downing KJ, Thomson JA (2000).** Introduction of the *Serratia marcescens* chiA gene into an endophytic *Pseudomonas fluorescens* for the biocontrol of phytopathogenic fungi. *Can. J. Microbiol* **46**: 363-369.

**Dworkin M, Foster J (1958).** Experiments with some microorganisms which utilize ethane and hydrogen. *J Bacteriol* **75**:592–601.

**Edi PM, Moawad AM, Vlek PLG (1996).** Effect of phosphate-solubilizing *Pseudomonas putida* on the growth of maize and its survival in the rhizosphere. *Indones J Crop Sci* **11**: 13-23.

**Elbeltagy A, Nishioka K, Sato T, Suzuki H, Ye B, Hamada T, Isawa T, Mitsui H, Minamisawa K (2001).** Endophytic Colonization and In Planta Nitrogen Fixation by a *Herbaspirillum* sp. Isolated from Wild Rice Species. *Applied and Environmental Microbiology* **67(11)**: 5285–5293. DOI: 10.1128/AEM.67.11.5285–5293.2001.

**El-Tarably KA (2008).** Promotion of tomato (*Lycopersicon esculentum* Mill.) plant growth byrhizosphere competent 1-aminocyclopropane-1-carboxylic acid deaminase-producing streptomycete actinomycetes. *Plant Soil* **308**:161–174.

**Elumalai EK, Chandrasekaran N, Thirumalai T, Sivakumar C, Therasa SV, David E(2009).** Achyranthes aspera leaf extracts inhibited fungal growth. *International Journal of Pharmtech Research* **1(4)**:1576-1579.

**Engelhard M, Hurek T, Reinhold-Hurek B (2000).** Preferential occurrence of diazotrophic endophytes, *Azoarcus* spp., in wild rice species and land races of *Oryza sativa* in comparison with modern races. *Environ Microbiol* **2**:131-141.

**Felsenstein J (1985).** Phylogenies and the comparative method. *Am Nat* **125**:1-15.

**Fisher PJ, Petrini O, Scott HML (1992).** The distribution of some fungal and bacterial endophytes in maize (*Zea mays* L.). *New Phytol* **122**:299–305.

**Fouzia A, Allaoua S, Hafsa CS, Mostefa G (2015).** Plant growth promoting and antagonistic traits of indigenous fluorescent pseudomonas spp. isolated from wheat rhizosphere and *A. halimus* endosphere. *European Scientific Journal* **11(24)**: 129-148.

**Foyer CH, Noctor G (2005).** Oxidant and antioxidant signalling in plants: a re-evaluation of the concept of oxidative stress in a physiological context. *Plant Cell Environ* **28**:1056–1071.

**Gardner RA, Kinkade R, Wang C, Phanstiel O (2004).** Total synthesis of petrobactin and its homologues as potential growth stimuli for *Marino* bacter *hydrocarbon oclasticus*, an oil-degrading bacteria. *J Org Chem* **69**: 3530–3537.

**George P, Gupta A, Gopal M, Thomas L, Thomas GV (2013).** Multifarious beneficial traits and plant growth promoting potential of *Serratia marcescens* KiSII and *Enterobacter* sp. RNF 267 isolated from the rhizosphere of coconut palms (*Cocos nucifera* L.). *World J Microbiol Biotechnol* **29**:109-117.

**Ghani A (2008).** Analgesic and Neuropharmacological Investigations of the Aerial Part of *Achyranthes aspera* Linn. *Stamford Journal of Pharmaceutical Sciences* **1(1,2)**: 44-50.

**Glick BR (2012).** Plant growth-promoting bacteria: mechanisms and applications. Hindawi Publishing Corporation. *Scientifica Article ID 963401*.

**Gopalaswamy G, Kannaiyan S, O'Callaghan K J, Davey M R and Cocking EC (2000).** The xylem of rice (*Oryza sativa*) is colonized by *Azorhizobium caulinodans*. *Proceedings Royal Society (London) B*, **267**: 103–107.

**Gordon SA, Weber RP (1951).** Colorimetric estimation of indole acetic acid. *Plant Physiol* **26**:192–195.

**Govindaranjan M, Kwon SW, Weon HY (2007).** Isolation, molecular characterization and growth promoting activities of endophytic sugarcane diazotroph *klebsiella* sp. GR9. *World J Microbiol. Biotechnol* **23**, 997-1006.

**Guerinot ML and Ying Y (1994).** Iron: nutritious, noxious, and not readily available. *Plant Physiol* **104**:815–820.

**Guo X, Iersel V, Chen MW, Brackett JRE, Beuchat LR (2002).** Evidence of association of *salmonellae* with tomato plants grown hydroponically in inoculated nutrient solution. *Appl. Environ. Microbiol* **68**: 3639-3643.

**Gupta G, Panwar J, Jha PN (2013).** Natural occurrence of *Pseudomonas aeruginosa*, a dominant Cultivable diazotrophic endophytic bacterium colonizing *Pennisetum glaucum* (L.) R.Br. *Applied Soil Ecology* **64**: 252–261.

**Gupta M, Kiran SA, Gulati B, Singh R, Tewaria (2012).** Isolation and identification of phosphate solubilizing bacteria able to enhance the growth and aloin-A biosynthesis of *Aloe barbadensis* Miller. *Microbiological Research* **167**: 358–363.

**Gyaneshwar P, James EK, Mathan N, Reddy PM, Reinhold-Hurek B, Ladha JK (2001).** Endophytic Colonization of Rice by a Diazotrophic Strain of *Serratia marcescens*. *Journal of Bacteriology* **183(8)**: 2634–45.

**Hallmann J, Quadt-Hallmann A, Mahafee WF, Klopper JW (1997).** Bacterial endophytes in agricultural crops. *Can. J. Microbiol* **43**: 895-914.

**Hamdali H, Hafidi M, Virolle MJ and Ouhdouch Y (2008).** Rock phosphate-solubilizing actinomycetes: screening for plant growth-promoting activities. *World J Microbiol Biotechnol* **24**:2565-2575.

**Hamilton CE, Gundel PE, Helander M, Saikkonen K (2012).** Endophytic mediation of reactive oxygen species and antioxidant activity in plants: a review. *Fungal Diversity* **54**:1–10DOI 10.1007/s13225-012-0158-9.

**Han J, Sun L, Dong X, Cai Z, Sun X, Yang H, Wang Y, Song W (2005).** Characterization of a novel plant growth-promoting bacteria strain *Delftia tsuruhatensis* HR4 both as a diazotroph and a potential biocontrol agent against various plant pathogens. *Systematic and Applied Microbiology* **28**:66–76.

**Hansen M, Kragelund L, Nybroe O, Sørensen J (1997).** Early colonization of barley roots by *Pseudomonas fluorescens* studied by immunofluorescence technique and confocal laser scanning microscopy. *FEMS Microbiol Ecol* **23**:353–360.

**Hanway JJ, Heidel H (1952).** Soil analysis methods as used in Iowa State. College soil testing laboratory. *Bulletin* **57**:1-131.

**Harboim PR, Harboim CC, van Overbeek LS, Elsas JD (2012).** Dynamics of seed-borne rice 410 endophytes on early plant growth stages. *PLoS One* doi:411 10.1371/journal.pone.0030438.

**Harboim PR, Overbeek LSV, Berg G, Pirttilä AM, Compani S, Campisano A, Doring M, Sessitsch A.** The Hidden World within Plants: Ecological and Evolutionary Considerations for Defining Functioning of Microbial Endophytes.

**Harboim PR, Overbeek LSV, Elsas JD (2008).** Properties of bacterial endo-phytes and their proposed role in plant growth. *Trends Microbiol Sci* **16**: 463–471.

**Hardy RWF, Burns RC, Parshall GW (1971).** The biochemistry of N<sub>2</sub> Fixation. Bioinorganic chemistry. *American Chemical Society*.

**Hartmann A, Stoffels M, Eckert B, Kirchhof G, Schloter M (2000).** Analysis of the presence and diversity of diazotrophic endophytes. In: Triplett EW (ed) Prokaryotic nitrogen fixation: a model system for the analysis of a biological process. *Horizon Scientific Press, Wymondham, UK*, 727–736.

**Herrera SD, Grossi C, Zawoznik M, Groppa MD (2016).** Wheat seeds harbour bacterial endophytes with potential as plant growth promoters and biocontrol agents of *Fusarium graminearum*. *Micobiological Research*.

**Hider RC and Kong X (2010).** Chemistry and biology of siderophores, *Nat Prod Rep* **27**:637–657.

**Hossain MJ, Khaleda L, Chowdhury MA, Arifuzzaman M, Al-Forkan M (2013).** Phytochemical Screening and Evaluation of Cytotoxicity and Thrombolytic Properties of *Achyranthes Aspera* Leaf Extract. *IOSR Journal of Pharmacy and Biological Sciences* **6(3)**: 30-38.

**Hurek T, Reinhold-Hurek B, Van Montagu M, Kellenberger E (1994).** Root colonization and systemic spreading of *Azoarcus* sp. strain BH72 in grasses. *Journal of Bacteriology* **176**:1913–1923.

**Ikan R, Ravid U, Trosset D, Shulman E (1971).** Ecdysterone: an insect molting hormone from *Achyranthes aspera*. *Experientia* **27(5)**: 504-505.

**Iniguez AL, Dong Y, Triplett EW (2004).** Nitrogen fixation in wheat provided by *Klebsiella pneumoniae* 342. *Mol plant Microbe Interact* **17**:1078-1085.

**Izquierdo JA, Nusslein K (2006).** Distribution of extensive *nifH* gene diversity across physical soil micro environments. *Microbiol Ecol* **51**:441-452.

**Jackson ML (1958).** Soil chemistry analysis. *Prentice-Hall Inc.* Englewood Cliffs, New Jersey.

**James EK, Gyaneshwar P, Mathan N, Barraquioowl, Reddy PM, Ianetta PPM, Olivares FL, Ladha JK(2002).** Infection and colonization of rice seedlings by the plant growth-promoting bacterium *Herbaspirillum seropedicae* Z67. *Mol Plant Microbe Interact* **15**: 894–906.

**Janarthine SRS, Eganathan P (2012).** Plant Growth Promoting of Endophytic Sporosarcina aquimarina SjAM16103 Isolated fromthe Pneumatophores of Avicenniamarina L. *International Journal of Microbiology* **2012**, Article ID 532060, 10 pages doi:10.1155/2012/532060.

**Jasim B, Jimtha CJ, Jyothis M, Radhakrishnan EK (2013).** Plant growth promoting potential of endophytic bacteria isolated from *Piper nigrum*. *Plant Growth Regul* **71**:1–11. doi:10.1007/s10725-013-9802-y.

**Jasim B, Joseph AA, John CJ, Mathew J, Radhakrishnan EK (2014).** Isolation and characterization of plant growth promoting endophytic bacteria from the rhizome of *Zingiber officinale*. *3 Biotech* **4**:197–204.

**Jayanthi P, Lalitha P (2011).** Reducing power of the solvent extracts of *Eichhornia crassipes* (Mart.) solms. *Int J Pharmacy Pharmaceut Sci* **3** (3): 126-128.

**Jensen JB, Egsgaard H, Van Onckelen H, Jochimsen BU (1995).** Catabolism of Indole-3-acetic acid and 4- and 5-Chloroindole- 3-acetic acid in *Bradyrhizobium japonicum*. *J Bacteriol* **177**: 5762–5766.

**Jha PN and Kumar AJ (2007).** Endophytic colonization of *Typha australis* by a plant growth-promoting bacterium *Klebsiella oxytoca* strain GR-3. *Appl Microbiol* **103**:1311-1320.

**Ji SH, Gururani MA, Chun SC (2014).** Isolation and characterization of plant growth promoting endophytic diazotrophic bacteria from Korean rice cultivars. *Microbiol. Res.* **169**: 83 98. 10.1016/j.micres.2013.06.003.

**Jia W, Zhang L (2005).** Challenges and opportunities in the Chinese herbal drug industry. In: Demain AL, Zhang L (eds) Natural Products: *Drug Discovery and Therapeutic Medicine*. Humana, Totowa, NJ, **229**.

**Jitendra YN (2009).** *In vitro* antioxidant activity of *Achyranthes aspera* L. *Journal of Pharmacy Research* **2**:1402-1403.

**Johnson L (2008).** Iron and siderophores in fungal-host interactions. *Mycol Res.* **112**:170–83.

**Johnson LJ, Koulman A, Christensen M, Lane GA, Fraser K, Forester N, Johnson RD, Bryan GT, Rasmussen S (2013).** An extracellular siderophore is required to maintain the mutualistic interaction of *Epichloë festucae* with *Lolium perenne*. *PLoS Pathog* **9(5)**.

**Kahkonen, MP, Hopia AI, Vuorela HJ, Rauha JP, Pihlaja K, Kujala TS, Heinoen M (1999).** Antioxidant activity of plant extract containing phenolic compounds. *J.Agric.Food Chem* **47**, 3954-3962.

**Kapoor VK, Singh H (1966).** Isolation of Betain from *Achyranthes aspera* Linn. *Indian Journal of Chemistry* **4(10)**: 461.

**Katewa SS, Arora A (2001).** Hepato Protective effects of certain Ethanomedical plants from Aravalli Hills of Rajasthan. *Indian Drugs* **38**: 332-335.

**Kathiravan V. Krishnani K K (2014).** *Pseudomonas aeruginosa* and *Achromobacter* sp. nitrifying aerobic denitrifiers have a plasmid encoding for denitrifying functional genes. *World J Microbiol Biotechnol* **30**:1187–1198. DOI 10.1007/s11274-013-1543-6.

**Kaur G, Sudhakara RM (2013).** Phosphate solubilizing rhizobacteria from an organic farm and their influence on the growth and yield of maize (*Zea mays* L.). *J Gen Appl Microbial* **59**: 295-303.

**Khamna S, Yokota A, Peberdy JF, Lumyong S (2010).** Indole-3-acetic acid production by *Streptomyces* sp. isolated from some Thai medicinal plant rhizosphere soils. *Eur Asia J Bio Sci* **4**: 23-32.

**Khan AR, Park GS, Asaf S, Hong SJ, Jung BK, Shin JH (2017).** Complete genome analysis of *Serratia marcescens* RSC-14: A plant growth-promoting bacterium that alleviates cadmium stress in host plants. *PLoS One*. doi: 10.1371/journal.pone.0171534.

**Khan AL, Waqas M, Hussain J, Al-Harrasi A, Al-Rawahi A, Al-Hosni K, Kim MJ, Adnan M, Lee IJ (2014).** Endophytes *Aspergillus caespitosus* LK12 and *Phoma* sp. LK13 of *Moringa peregrina* produce gibberellins and improve rice plant growth. *Journal of Plant Interactions* **9**(1):731–737.

**Khan AL, Halo BA, Elyassi A, Sajid A, Al-Hosni K, Hussain J, Al-Harrasi A, Lee IJ (2016).** Indole acetic acid and ACC deaminase from endophytic bacteria improves the growth of *Solanum lycopersicum*. *Electronic Journal of Biotechnology* **21**:58–64.

**Khan MS, Zaidi A, Wani PA, Ahemad M, Oves M (2009).** Functional diversity among plant growth-promoting rhizobacteria. In: Khan MS, Zaidi A, Musarrat J (eds) Microbial strategies for crop improvement. *Springer, Berlin* 105–132.

**Khan MS, Zaidi A, Ahemad M, Oves M, Wani PA (2010).** Plant growth promotion by phosphate solubilizing fungi-current perspective. *Arch Agron Soil Sci* **56**:73–98.

**Khastgir HN, Sen Gupta SK, Sen Gupta P (1958).** The sapogenin from seeds of *Achyranthes aspera* Linn. *Journal of the Indian Chemical Society* **35**: 693-694.

**Khilyas IV, Shirshikova TV, Matrosova LE, Sorokina AV, Sharipova MR, Bogomolnaya LM (2016).** Production of Siderophores by *Serratia marcescens* and the role of MacAB efflux pump in Siderophore secretion. *Bio Nano Sci* DOI 10.1007/s12668-016-0264-3.

**Kim KY, Jordan D, McDonald GA (1997).** Solubilization of hydroxyapatite by *Enterobacter agglomerans* and cloned *Escherichia coli* in culture medium, *Biol. Fert. Soils* **24**:347-352.

**Kim OS, Cho YJ, Lee K, Yoon SH, Kim M, Na H, Park SC, Jeon YS, Lee JH (2012).** Introducing EzTaxon-e: a prokaryotic 16S rRNA gene sequence database with phylotypes that represent uncultured species. *Int J Syst Evol Microbiol* **62**: 716–721.

**Kim YC, Jung H, Kim KY, Park SK (2008).** An effective biocontrol bioformulation against Phytophthora blight of pepper using growth mixtures of combined chitinolytic bacteria under different field conditions. *Eur.J.Plant Pathol* **120**: 373–382.doi:10.1007/s10658-007-9227-4.

**Kimura M (1983).** The neutral theory of molecular evolution. Cambridge University Press.

**Kloepper JW, Leong J, Teintze M, Schroth MN (1980).** Enhanced plant growth by siderophores produced by plant growth-promoting rhizobacteria. *Nature* **286**: 885–886.

**Koenig RA, Johnson CR (1942).** Colorimetric determination of phosphorus in biological materials. *Ind Eng Chem Anal* **14**: 155–6.

**Koga J, Adachi T and Hidaka H (1991).** Molecular cloning of the gene for indole pyruvate decarboxylase from *Enterobacter cloacae*. *Mol Gen Genet* **226**:10–16.

**Kpomblekou, K and. Tabatabai M A (1994).** Effect of organic acids on release of phosphorus from phosphate rocks. *Soil Sci* **158**: 442-453.

**Kuklinsky-Sobral J, Araujo WL, Mendes R, Geraldí IO, Pizzirani-Kleiner AA, Azevedo JL (2004).** Isolation and characterizationof soybean-associated bacteria and their potential for plant growth promotion. *Environ Microbiol* **6**:1244–1251.

**Kumar A, Singh R, Yadav A, Giri DD, Singh PK, Pandey KD (2016).** Isolation and characterization of bacterial endophytes of Curcuma longa L. *3 Biotech* **6**: 60-68.

**Kumar A, Suchetha Kumari N, Divya Bhargavan (2012).** Evaluation of in vitro antioxidant potential of ethanolic extract from the leaves of *Achyranthes aspera*. *Asian J Pharmaceut Clin Res* **5(3)**:146-148.

**Kumar A, Singh R, Yadav A, Giri DD, Singh PK, Kapil D (2016).** Isolation and characterization of bacterial endophytes of *Curcuma longa* L. *3 Biotech* **6**:60.

**Kumar V, Behl RK, Narula N (2001).** Establishment of phosphate solubilizing strains of *Azotobacter chroococcum* in the rhizosphere and their effect on wheat cultivars under greenhouse conditions. *Microbiol. Res.* **156**: 87–93.

**Ladha JK, Barraquio WL, Watanabe (1983).** Isolation and identification of nitrogen-fixing, *Enterobactercloacae* and *Klebsiellapanticala* associated with rice plants. *Can. J Microbial* **29**: 1301-1308.

**Lamb TG, Tonkyn DW, Kluepfel DA (1996).** Movement of *Pseudomonas aureofaciens* from the rhizosphere to aerial plant tissue. *Can J Microbiol* **42**:1112–1120.

**Lankford CE (1973).** Bacterial assimilation of iron. *Crit Rev Microbiol* **2**:273–331.

**Larkin MA, Blackshields G, Brown NP, Chenna R, McGettigan PA, McWilliam H, Valentin F, Wallace IM, Wilm A, Lopez R, Thompson JD, Gibson TJ Higgins DG (2007).** ClustalW and ClustalX version 2. *Bioinformatics* **23(21)**: 2947-2948.

Lavania M, Nautiyal CS (2013). Solubilization of tricalcium phosphate by temperature and salt tolerant *Serratia marcescens* NBRI1213 isolated from alkaline soils. *African Journal of Microbiology Research* **7**: 4403-4413.

**Lee S, Flores-Encarnación M, Contreras-Zentella M, Gracia-Flores L, Escamilla JE, Kennedy C (2004).** Indole-3-acetic acid biosynthesis is deficient in *Gluconacetobacter diazotrophicus* strain with mutations in cytochrome c biogenesis genes. *J. Bacteriol* **186**: 5384–5391.

**Legault GS, Lerat S, Nicolas P and Beaulieu C (2011).** Tryptophan regulates thaxtomin A and indole-3-acetic acid production in *Streptomyces scabiei* and modifies its interactions with radish seedlings. *Phytopathology* **101**:1045–1051.

**Li B, Yu R, Liu B, Tang Q, Zhang G, Wang Y, Xie G, Sun G (2011).** Characterization and comparison of *Serratia marcescens* isolated from edible cactus and from silkworm for virulence potential and chitosan susceptibility. *Brazilian Journal of Microbiology* **42**: 96-104.

**Li X, Geng X, Xie R, Fu L, Jiang J, Gao L, Sun J (2016).** The endophytic bacteria isolated from elephant grass (*Pennisetum purpureum* Schumach) promote plant growth and enhance salt tolerance of Hybrid Pennisetum. *Biotechnol Biofuels* **9**:190.

**Lin L and Xu X (2013).** Indole-3-acetic acid production by endophytic *Streptomyces* sp. En-1 isolated from medicinal plants. *Curr Microbiol* **67**:209-217.

**Lindsay W L, Vlek P L G and Chien S H (1989).** Phosphate minerals. In Minerals in soil environment, 2nd edn. Eds J B Dixon and S B Weed. *Soil Science Society of America, Madison, WI, USA* 1089–1130.

**Lins MDCR, Fontes JEM, de Vasconcelos NM, da Silva Santos DM, Ferreira, OE, de Azevedo JL, de Souza Lima GAM (2014).** Plant growth promoting potential of endophytic bacteria isolated from cashew leaves. *African Journal of Biotechnology* **13**:3360-3365.

**Liu X, Jia J, Atkinson S, Camara M, Gao K, Li H, Cao J (2010).** Biocontrol potential of an endophytic *Serratia* sp. G3 and its mode of action. *World J Microbiol Biotechnol* **26**:1465–1471. DOI 10.1007/s11274-010-0321-y.

**Lodewyckx C, Vangronsveld J, Porteous F, Moore ERB, Taghavi S, Mezgeay M, van der Lelie D (2002).** Endophytic bacteria and their potential applications. *Crit Rev Plant Sci* **21**: 583–606.

**Long HH, Schmidt DD, Baldwin IT (2008).** Native Bacterial Endophytes Promote Host Growth in a Species-Specific Manner; Phytohormone Manipulations Do Not Result in Common Growth Responses *PLoS ONE* **3** (7).

**Loper JE, Buyer JS (1991).** Siderophores in microbial interactions on plant surfaces. *Mol Plant Microbe In* **4**:5–13.

**Loper JE, Scroth MN (1986).** Influence of bacterial sources on indole-3 acetic acid on root elongation of sugarbeet. *Phytopathology* **76**: 386-389.

**López BR, Bashan Y, Bacilio M (2011).** Endophytic bacteria of *Mammillaria fraileana*, an endemic rock-colonizing cactus of the southern Sonoran Desert. *Arch Microbiol* **193**:527-41.

**Lugas A, Dworschak E, Blazovics A, Kery A (1998).** Antioxidant ad free radical scavenging properties of squeezed juice from black radish (*Raphanussativus L.*, var. *niger*) root. *Phytotherapy Research* **12**, 502-506.

**Lumactud R, Shen SY, Lau M, Fulthorpe R (2016).** Bacterial Endophytes Isolated from Plants in Natural Oil Seep Soils with Chronic Hydrocarbon Contamination. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2016.00755.

**Macagnan D, Romeiro RS, Pomella AWV, de Souza JT (2008).** Production of lytic enzymes and siderophores, and inhibition of germination of basidiophores of *Moniliophthora (exCrinipellis) perniciosa* by phylloplane actinomycetes. *Biol Control* **309**-314.

**Maliha R, Samina K, Najma A, Sadia A, Farooq L (2004).** Organic acid production and phosphate solubilization by phosphate solubilizing microorganisms under in vitro conditions. *Pak J Biol Sci* **7**:187–196.

**Malik CP, Singh MB (1980).** Plant Enzymology and Histo-Enzymology: A Text Manual. Kalyani publishers, New Delhi:286.

**Manulis S, Shafrir H, Epstein E, Lichter A, Barash I (1994).** Biosynthesis of indole-3-acetic acid via the indole-3-acetamide pathway in *Streptomyces* spp. *Microbiology* **140**:1045–1050.

**Marques APGC, Pires C, Moreira H, Rangel AOSS, Castro PML (2010).** Assessment of the plant growth promotion abilities of six bacterial isolates using *Zea mays* as indicator plant. *Soil Biology and Biochemistry* **42**: 1229-1235.

**Martínez L, Caballero J, Orozco J, Martínez-Romero E (2003).** Diazotrophic bacteria associated with banana (*Musa* spp.). *Plant Soil* **257**:35-47.

**McGill WB, Cole CV (1981).** Comparative aspects of cycling of organic C, N, S and P through soil organic matter. *Geoderma* **26**:267–286.

**McLaughlin BR, Russell PR, Carroll DJ (1988).** Cogen plant includes 12-acre greenhouse, oyster farm. *Power Eng* **92**:40-42.

**Meneses CHSG, Rouws LFM, Simões-Araújo V, Idal MS, Baldani JI (2011).** Exopolysaccharide production is required for biofilm formation and plant colonization by the nitrogen-fixing endophyte *Gluconacetobacter diazotrophicus*. *Molec. Plant Microbe Interact.* **24**:1448-1458.

**Merillon JM, Ramawat KG (2007).** Biotechnology for medicinal plants: research needs. In: Ramawat KG, Merillon JM (eds) Secondary Metabolites: *Plants and Microbes*.

**Meyer JM, Van VT, Stintzi A, Berge O, Winkelmann G (1995).** Ornibactin production and transport properties in strains of *Burkholderia vietnamiensis* and *Burkholderia cepacia* (formerly *Pseudomonas cepacia*). *Biometals* **8**: 309–317.

**Minamisawa K, Ogawa K, Fukuhara H, Koga J (1996).** Indolepyruvate pathway for indole-3-acetic acid biosynthesis in *Bradyrhizobium elkanii*. *Plant Cell Physiol* **37**:449-453.

- Misk A, Franco C (2011).** Biocontrol of chickpea root rot using endophytic actinobacteria. *Biol Control* **56**:811–822.
- Misra N, Gupta G, Prabhat N, Jha (2012).** Assessment of mineral phosphate-solubilizing properties and molecular characterization of zinc-tolerant bacteria. *Journal of Basic Microbiology* **52**: 1–10.
- Mohinder K, Sanjeev, Sapna S, Vishal R, Girish S (2011).** Potential of indigenous strains of *Pseudomonas* and *Bacillus* species for the production of plant growth regulators, *viz.*, Auxins, Gibberellins and Cytokinins from carnation and medicinal plants. *Progressive Horticulture* **43**: (1): 56-60.
- Morris RO (1995).** Genes specifying auxin and cytokinin biosynthesis in prokaryotes. *Plant Hormones* 318–339.
- Muthukumarasamy R, Cleenwerck I, Revathi G, Vadivelu M, Janssens D, Hoste B, Gum KU, Park K, Son CY, Sa T, Caballero-Mellado J (2005).** Natural association of *Gluconoacetobacter diazotrophicus* and diazotrophic *Acetobacter peroxydans* with wetland rice. *Syst Appl Microbiol* **28**:277–286. doi: 10.1016/.2005.01.006.
- Narayana KJ, Peddikotla P, Krishna PSJ, Venketeswarlu Y, Vijayalakshmi M (2009).** Indole-3-acetic acid production by *Streptomyces albidoslavus*. *J Biol Res Thessaloniki* **11**:49–55.
- Narveer, Vyas A, Kumar H, Putatunda C (2014).** In vitro Phosphate Solubilization by *Bacillus* sp. NPSBS 3.2.2 obtained from the Cotton Plant Rhizosphere. *Biosciences Biotechnology Research Asia* **11(2)**: 401-406.
- Nautiyal CS (1999).** An efficient microbiological growth medium for screening phosphate solubilizing microorganisms. *FEMS Microbiol Lett* **170**: 265–270.
- Neilands JB (1995).** Siderophores: Structure and function of microbial iron transport compounds. *J Biol Chem* **270**:26723–26726.

**Neogi NC, Garg RD, Rathor RS (1970).** *Indian Journal of Pharmacy* **32(2):** 43-46.

**Normanly J, Slovin JP, Cohen JD (1995).** Rethinking auxin in biosynthesis and metabolism. *Plant physiol* **107:**323-329.

**Norrish K, Rosser H (1983).** Mineral phosphate. In Soils: an Australian viewpoint. Academic Press, Melbourne, CSIRO/London, UK, Australia335–361.

**Odabasoglu F, Aslan A, Cakir A, Suleyman H, Karagoz Y, Bayir Y, Halici M (2004)** Antioxidant activity, reducing power and total phenolic content of some lichen species. *Fitoterapia* **76:** 216–219.

**Olivares F L, Baldani V L D, Reis V M, Baldani J I, Dobereiner J (1996).** Occurrence of endophytic diazotrophs *Herbaspirillum* spp. in roots, stems and leaves, predominantly of Gramineae. *Biol. Fert. Soils* **21:** 197–200.

**Omar SA (1998).** The role of rock-phosphate-solubilizing fungi and vesicular arbuscular–mycorrhiza (VAM) in growth of wheat plants fertilized with rock phosphate. *World J Microb Biot* **14:**211–8.

**Oteino N, Lally RD, Kiwanuka S, Lloyd A, Ryan D, Germaine KJ, Dowling DN (2015).** Plant growth promotion induced by phosphate solubilizing endophytic Pseudomonas isolates. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2015.00745.

**Pai SK (2002).** Use of alternative cancer medicine in India. *The Lancet Oncology*.**3(7):** 394–395.

**Panda P, Chakraborty S, Ray D P, Mahato B, Pramanik B, Choudhury A (2015).** Solubilization of Tricalcium Phosphate and Production of IAA by Phosphate Solubilizing Bacteria Isolated from Tea Rhizosphere Soil. *Economic Affairs* **60(4):**805-809 DOI: 10.5958/0976-4666.2015.00113.8.

**Pandey G, Rao CV, Gupta SS, Verma KK, Singh M (2014).** Antioxidant and Antibacterial Activities of Leaf Extract of *Achyranthes aspera* Linn.(Prickly Chaff Flower). *European Journal of Medicinal Plants* **4(6)**: 696-708.

**Pandey G, Rao CV, Gupta SS, Verma KK, Singh M (2014).** Antioxidant and Antibacterial Activities of Leaf Extract of *Achyranthes aspera* Linn. (Prickly Chaff Flower). *European Journal of Medicinal Plants* **4(6)**: 696-708.

**Pandey P, Sun CK, Gupta CP, Dinesh K. Maheshwari (2005).** Rhizosphere Competent *Pseudomonas aeruginosa* GRC1 Produces Characteristic Siderophore and Enhances Growth of Indian Mustard (*Brassica campestris*). *Current microbiology* **51**: 303–309.

**Park J, Bolen N, Megharaj M, Naidu R (2010).** Isolation of phosphate solubilizing bacteria and characterization of their effects on lead immobilization. *J. Hazard. Mater* **185(2-3)**: 829-836.

**Patel HA, Patel RK, Khristi SM, Parikh K, Rajendran G (2012).** Isolation and Characterization of Bacterial Endophytes From *Lycopersicon esculentum* Plant and Their Plant Growth Promoting Characteristics. *Nepal Journal of Biotechnology* **2(1)**:37–52.

**Patel M V, Patel RK (2014).** Indole-3-acetic acid (IAA) production by *endophytic bacteria* isolated from saline dessert, the little runn of kutch. *CIBTech Journal of Microbiology* **3(2)**: 17-28.

**Paul D, De D, Ali KM, Chatterjee K, Nandi DK, Ghosh D (2010).** *Contraception* **81(4)**:355-361.

**Paul D, Sinha SN (2017).** Isolation and characterization of phosphate solubilizing bacterium *Pseudomonas aeruginosa* KUPSB12 with antibacterial potential from river Ganga, India. *Annals of Agrarian Science* **15(1)**: 130–136.

**Payne SM (1994).** Detection, Isolation and Characterization of siderophores. *Methods enzymol* 235:329.

**Prasad R, Kamal S, Sharma PK, Oelmüller R, Varma A (2013).** Root endophyte *Piriformospora Indica* DSM 11827 alters plant morphology, enhances biomass and antioxidant activity of medicinal plant *Bacopamonniera*. *J. Basic Microbiol* 53: 1016–1024.

**Puente ME, Li CY, Bashan Y (2009).** Endophytic bacteria in cacti seeds can improve the development of cactus seedlings. *Environ. Exp. Bot.* 66: 402–408.

**Puri SC, Nazir A, Chawla R, Arora R, Riyaz-ul-Hasan S, Amna T (2006).** The endophytic fungus *Trametes hirsuta* as a novel alternative source of podophyl-lotoxin and related aryl tetralin lignans. *Journal of Biotechnology* 122:494–510.

**Puri SC, Verma V, Amna T, Qazi GN, Spiteller M (2005).** An endophytic fungus from *Nothapodytes foetida* that produces camptothecin. *Journal of Natural Products* 68:1717–19.

**Ramawat KG (2007).** Secondary metabolites in nature. *Biotechnology: Secondary Metabolites*.21.

**Ramawat KG, Goyal S (2008).** The Indian herbal drugs scenario in global perspectives.

**Rameshwar RD (2007).** Essential oil constituents of *Achyranthes aspera* leaves. *Indian Perfumer* 51(1): 33-34.

**Souza RALS, De Souza SA, De Oliveira MVV, Ferraz TM, Figueiredo FAMMA, Da Silva ND, Rangel PL, Panisset CRS, Olivares FL, Campostrini E, De Souza FGA (2015).** Endophytic colonization of *Arabidopsis thaliana* by *Gluconacetobacter diazotrophicus* and its effect on plant growth promotion, plant physiology, and activation of plant defense. *Plant Soil*. DOI 10.1007/s11104-015-2672-5.

**Rangjaroen C, Rerkasem B, Teaumroong N, NoisangiamR, Lumyong S (2014).** Promoting plant growth in a commercial rice cultivar by endophytic diazotrophic bacteria isolated from rice landraces. *Ann Microbiol.* DOI 10.1007/s13213-014-0857-4.

**Rani N, Sharma SK, Vasudeva N (2012).** Assessment of Antibesity Potential of *Achyranthes aspera* Linn. *Seed Evidence-Based Complementary and Alternative Medicine*, Article ID 715912, doi:10.1155/2012/715912.

**Rosado AS, Duarte GF, Seldin L, Elsas JDV (1998).** Genetic Diversity of *nifH* gene sequences in *Paenibacillus azotofixans* strains and soil samples analyzed by Denaturing gradient gel electrophoresis of PCR-amplified gene fragments. *Appl Environ Microbiol* **64**:2770–2779.

**Ravindran C, Naveenan T, Varatharajan GR, Rajasabapathy R, Meena RM (2012).** Antioxidants in mangrove plants and endophytic fungal associations. *Bot. Mar.* **55**: 269–279.

**Reinhardt EL, Ramos PL, Manfio GP, Barbosa HR, Pavan C, Moreira-Filho CA (2008).** Molecular Characterization of Nitrogen-fixing Bacteria isolated from Brazilian agricultural plants at Sao Paulo. *State Brazilian Journal of Microbiology* **39**:414-422.

**Reinhold-Hurek B, Hurek T (1998).** Interactions of gramineous plants with *Azoarcus* spp. And other diazotrophs: identification, localization and perspectives to study their function. *Crit Rev Plant Sci* **17**:29–54.

**Reinhold-Hurek B, Hurek T, Gillis M, Hoste B, Vancanneyt M, Kersters K, DeLey J (1993).** *Azoarcus* gen. nov., nitrogen-fixing proteobacteria associated with the roots of Kallagrass (*Leptochloa fusca* (L.) Kunth), and description of two species, *Azoarcus indigenus* sp. nov. and *Azoarcus communis* sp.nov. *Int. J. Syst. Bacteriol* **43**: 574–584.

**Reiter B, Bürgmann H, Burg K, Sessitsch A (2003).** Endophytic *nifH* gene diversity in African sweet potato. *Can J Microbiol* **49**: 549–555.

**Reiter B, Sessitsch A (2006).** Bacterial endophytes of the wildflower *Crocus albiflorous* analyzed by characterization of isolates and by a cultivation independent approach. *Can J Microbiol* **52**:140–149.

**Rengel Z, Marschner P (2005).** Nutrient availability and management in the rhizosphere: exploiting genotypic differences. *New Phytologist* **168**:305–312.

**Rheinhold-Hurek T, Maes S, Gemmer M, Montagu V, Hurek T (2006).** An endoglucanase is involved in infection of rice roots by the not-cellulose-metabolizing endophyte *Azoarcus* sp strain BH72. *Molec. Plant Microbe Interact* **19**:181-188.

**Richardson AE (1994).** Soil microorganisms and phosphorus availability. In: Pankhurst CE, DoubeBM, Gupta VVSR, Grace PR (eds) *Management of the soil biota in sustainable farming systems* 50–62.

**Richardson AE (2001).** Prospects for using soil microorganisms to improve the acquisition of phosphorus by plants. *Func Plant Biol* **28**:897–906.

**Rodríguez H and Fraga R (1999).** Phosphate solubilizing bacteria and their role in plant growth promotion. *Biotechnol Adv* **17**:319–339.

**Rodriguez H, Fraga R, Gonzalez T, Bashan Y (2006).** Genetics of phosphate solubilization and its potential applications for improving plant growth-promoting bacteria. *Plant Soil* **287**:15–21.

**Rosenblueth M, Martínez L, Silva J, Martínez-Romero E (2004).** *Klebsiella variicola*, a novel species with clinical and plant associated isolates. *System Appl Microbiol* **27**:27–35.

**Rosenblueth M, Martínez-Romero E (2006).** Bacterial endophytes and their interactions with hosts. *Mol. Plant-Microbe Interact.* **19**(8): 827–837.

**Rungin S, Indananda C, Suttiviriya P, Kruasawan W, Jaemsaeang R, Thamchaipenet (2012).** A plant growth enhancing effects by a siderophore-producing endophytic streptomycete isolated from a Thai jasmine rice plant (*Oryza sativa* L. cv. KDM105) *Antonie van Leeuwenhoek* **102**:463–472.

**Ryan RPK, Germaine A, Franks DJ, Ryan DN, Dowling (2008).** Bacterial endophytes: recent developments and applications. *FEMS Microbiol. Lett.* **278**: 1-9.

**Ryan RP, Monchy S, Cardinale M, Taghavi S, Crossman L, Avison MB, Berg G, van der Lelie D, Dow JM (2009).** The versatility and adaptation of bacteria from the genus *Stenotrophomonas*. *Nat Rev Microbiol* **7**:514–525.

**Ryu CM, Kim JW, Choi OH, Park SY, Park SH, Park CS (2005).** Nature of a root associated *Paenibacillus polymyxa* from field-grown winter barley in Korea. *J Microbiolm Biotechnol* **15**: 984-991.

**Sachdev DP, Chaudhari HG, Kasture VM, Dhavale DD, Chopade BA (2009).** Isolation and characterization of indole acetic acid (IAA) producing *Klebsiella pneumonia* strains from rhizosphere of wheat (*Triticum aestivum*) and their effect on plant growth. *Indian J Exp Biol* **47**: 993–1000.

**Saitou N, Nei M (1987).** The neighbour-joining method: a new method for reconstructing phylogenetic trees. *Mol Biol Evol* **4**:406-425.

**Salisbury FB (1994).** The role of plant hormones. In: *Plant– Environment Interactions*. Ed. R EWilkinson, Marcel Dekker, New York, USA 39–81.

**Sanchez Moreno C, Larrauri JA, Sura-Calizto F (1999).** Free radical scavenging capacity and inhibition of lipid oxidation of wines, grape juice and related polyphenolic constituents. *Food Res Int* **32(6)**:407-412.

**Sandhiya GS, Sugitha TCK, Balachandar D, Kumar K (2005).** Endophytic colonization and *in planta* nitrogen fixation by a diazotrophic *Serratia* sp. in rice. *Indian Journal of Experimental Biology* **43**: 802-807.

**Santoyo G, Moreno-Hagelsieb G, Orozco- Mosqueda MC, Glick BR (2015).** Plant Growth-Promoting Bacterial Endophytes. *Microbiological Research*.

**Sashidhar B, Podile AR (2010).** Mineral phosphate solubilization by rhizosphere bacteria and scope for manipulation of the direct oxidation pathway involving glucose dehydrogenase. *J Appl Microbiol* **109**:1–12.

**Saxena B, Modi M, Modi VV (1986).** Isolation and characterization of siderophores from *Azospirillum lipoferum* D-2. *J Gen Microbiol* **132**: 2219-2224.

**Sayyed RZ, Badgujar MD, Sonawane HM, Mhaske MM, Chincholkar SB (2005).** Production of microbial iron chelators (Siderophores) by Fluorescent Pseudomonads, *Indian journal of Biotechnology* **4**: 484-490.

**Schulz B, Boyle C, Draeger S, Römmert AK (2002).** Endophytic fungi: a source of novel biologically active secondary metabolites. *Mycological Research* **106**: 996-1004.

**Schulz B, Boyle C (2005).** The endophytic continuum. *Micol. Res.* **109**:661-686.

**Schwyn B, Neilands JB (1987).** Universal chemical assay for the detection and determination of siderophore. *Anal Biochem* **160**: 47–56.

**Seeley HW, VanDemark PJ (1981).** Microbes in Action: A Laboratory Manual of Microbiology, 3rd Ed, W.H. Freeman and Company, USA.

**Sekine M, Watanabe K, Syono K (1989).** Molecular cloning of a gene for indole-3-acetamide hydrolase from *Bradyrhizobium japonicum*. *J Bacteriol* **171**:1718–1724.

**Selvakumar G, Kundu S, Gupta AD, Shouche YS, Gupta HS (2008).** Isolation and Characterization of Nonrhizobial Plant Growth Promoting Bacteria from Nodules of Kudzu (*Pueraria thunbergiana*) and Their Effect on Wheat Seedling Growth. *Curr Microbiol* **134**:9.

**Selvakumar G, Mohan M, Kundu S, Gupta AD, Joshi P, Nazim S, Gupta HS (2008).** Cold tolerance and plant growth promotion potential of *Serratia marcescens* strain SRM (MTCC 8708) isolated from flowers of summer squash (*Cucurbita pepo*). *Letters in Applied Microbiology* **46**: 171–5.

**Sessitsch A, Coenye T, Sturz AV, Vandamme P, AitBarka E, Wang-Pruski G, Faure D, Reiter B Glick BR, Nowak J (2005).** *Burkholderia phytofirmans* sp. Nov., a novel plant-associated bacterium with plant beneficial properties. *Int. J. Syst. Evol. Microbiol* **55**:1187–1192.

**Seyedsayamdost MR, Cleto S, Carr G, Vlamakis H, João Vieira M, Kolter R, Clardy J (2012).** Mixing and matching siderophores clusters: structure and biosynthesis of serratiochelins from *Serratia* sp. V4. *J Am Chem Soc* **134**:13550–13553.

**Sgroy V, CassánF, MasciarelliO, Papa MFD, Lagares A, Luna V (2009).** Isolation and characterization of endophytic plant growth-promoting (PGPB) or stress homeostasis regulating (PSHB) bacteria associated to the halophyte *Prosopis strombulifera*. *Appl Microbiol Biotechnol*. DOI 10.1007/s00253-009-2116-3.

**Shibeshi W, Makonnen E, Debella A, Zerihun L (2006).** Phytochemical, contraceptive efficacy and safety evaluations of the methanolic leaves extract of *Achyranthes aspera* L. in rats. *Pharmacologyonline* **3**:217-224.

**Spaepen S, Vanderleyden J, Remans R (2007).** Indole-3-acetic acid in microbial and microorganism-plant signalling. *FEMS Microbiol Rev* **31**:425–448.

**Srinivasan K, Jagadish LK, Shenbhagaraman R, Muthumary J (2010).** Antioxidant activity of endophytic fungus *Phyllosticta* sp. isolated from *Guazumatomentosa*. *J Phytophytochem* **2**:37–41.

**Strobel GA (2003).** Endophytes as sources of bioactive products. *Microbes Infect* **5**:535–544.

**Strobel G, Daisy B (2003).** Bioprospecting for microbial endophytes and their natural products. *Microbiol. Mol. Biol. Rev.* **67**:491-502.

**Strobel G, Daisy B, Castillo U, Harper J (2004).** Natural products from endophytic microorganisms. *J. Nat. Prod.* **67**:257-268.

**Sturz AV, Christie BR, Matheson BG, Arsenault WJ, Buchanan NA (1999).** Endophytic bacterial communities in the periderm of potato tubers and their potential to improve resistance to soil-borne plant pathogens. *Plant Pathol* **48**:360-369.

**Subbiah BV, Asija GL (1956).** A rapid procedure for estimation of available nitrogen in soils. *Curr Sci* **25**:259-60. ^

**Subramaniam R (1961).** Cystone - a vegetable diuretic. *The Antiseptic* **2**: 103-106.

**Sun Y, Cheng Z, Glick BR (2009).** The presence of a 1-aminocyclopropane-1 carboxylate (ACC) deaminase deletion mutation alters the physiology of the endophytic plant growth-promoting bacterium *Burkholderia phytofirmans* PSJN. *FEMS Microbiol.Lett.* **296**: 131–136.

**Sutar NG, Sutar UN, Sharma YP, Shaikh IK, Kshirsagar SS (2008).** *Biosciences Biotechnology Research Asia* **5(2)**: 841-844.

**Szilagyi-Zecchin V, Ikeda A, Hungria M (2014).** Identification and characterization of endophytic bacteria from corn (*Zea mays L.*) roots with biotechnological potential in agriculture. *AMB Express* **4**: 1–9.

**Taghavi S1, Garafola C, Monchy S, Newman L, Hoffman A, Weyens N, Barac T, Vangronsveld J, van der Lelie D (2009).** Genome survey and characterization of endophytic bacteria exhibiting a beneficial effect on growth and development of poplar trees. *Appl Environ Microbiol* **75**:748-757.

**Tamura K, Peterson D, Peterson N, Stecher G, Nei M, Kumar S (2011).** MEGA6: molecular evolutionary genetics analysis using maximum likelihood, evolutionary distance, and maximum parsimony methods. *Mol Biol Evol* **28**: 2731–2739.

**Tan HM, Cao LX, He ZF, Su GJ, Lin B and Zhou SN (2006).** Isolation of endophytic actinobacteria from different cultivars of tomato and their activities against *Ralstonia solanacearum* *vitro*. *World J Microbiol Biotechnol* **22**:1275–1280.

**Tanaka A, Christensen MJ, Takemoto D, Pyoyun P, Scott B (2006).** Reactive oxygen species play a role in regulating a fungus-perennial ryegrass mutualistic interaction. *Plant Cell* **18**: 1052–1066.

**Taule C, Mareque C, Barlocco C, Hackembruch F, Reis VM, Sicardi M, Battistoni F (2012).** The contribution of nitrogen fixation to sugarcane (*Saccharum officinarum L.*), and the identification and characterization of part of the associated diazotrophic bacterial community. *Plant Soil* **356**:35–49.

**Theunis M, Kobayashi H, Broughton WJ, Prinsen E (2004).** Flavonoids, NodD1, NodD2, and nod-box NB15 modulate expression of the y4wEFG locus that is required for indole-3-acetic acid synthesis in *Rhizobium* sp. strain NGR234. *Mol Plant Microbe* **17**:1153–1161.

**Tian F, Ding Y, Zhu H, Yao L, Jin F, DuB (2008).** Screening, identification and antagonistic activity of a siderophore-producing bacteria G-229-21T from rhizosphere of tobacco. *Acta microbiologica Sinica* **48(5)**:631-7.

**Toumatia O, Compart S, Yekkour A, Goudjal Y, Sabaou N, Mathieu F, Sessitsch A, Zitouni A (2016).** Biocontrol and plant growth promoting properties of *Streptomyces mutabilis* strain IA1 isolated from a Saharan soil on wheat seedlings and visualization of its niches of colonization. *South African Journal of Botany* **105**: 234–239.

**Trolove SN, Hedly MJ, Kirk, GJD, Bolan, NS, Loganathan P (2003).** Progress in selected areas of rhizosphere research on P acquisition. *Aust. J. Soil Res.* **41**: 471–499.

**Umamaheswari M, Dhinesh S, Sivashanmugam T, Subhadraadevi V, Puliyath J, Madeswaran A (2012).** Anticataract and antioxidant activities of *Achyranthes aspera* Linn.against glucose-induced cataractogenesis using goat lenses. *J. Nat. Prod. Plant Resour.* **2(1)**: 153-161.

**UmaMaheswariT, Anbukkarasi K, Hemalatha T, Chendrayan K (2013).** Studies on phytohormone producing ability of indigenous endophytic bacteria isolated from tropical legume crops. *Int.J.Curr.Microbiol.App.Sci* **2(6)**: 127-136.

**Van Overbeek L, Van Elsas JD (2008).** Effects of plant genotype and growth stage on the structure of bacterial communities associated with potato (*Solanumtuberosum*L.). *FEMS Microbiol Ecol* **64**: 283–296.

**Vendant RT, Yu YJ, Lee SH, Rhee YH (2010).** Diversity of endophytic bacteria in ginseng and their potential for plant growth promotion. *J Microbiol* **48(5)**:559–565.

**Venkateswarlu B, Rao AV, Raina P (1984).** Evaluation of Phosphorous Solubilization by Microorganisms Isolated from Arid Soils. *Journal of the Indian Society of Soil Science* **32(3)**: 273-277.

**Verma SC, Ladha JK, Tripathi AK (2001).** Evaluation of plant growth promotion and colonization ability of endophytic diazotrophs from deep water rice. *J Biotechnol* **91**: 127–141.

**Verma SC, Singh A, Chowdhury SP, Tripathi AK (2004).** Endophytic colonization ability of two deep-water rice endophytes, *Pantoea* sp. and *Ochrobactrum* sp. using green fluorescent protein reporter. *Biotechnol Lett* **26**:425–429.

**Verma VC, Singh SK, Prakash S (2011).** Bio-control and plant growth promotion potential of siderophore producing endophytic *Streptomyces* from *Azadirachta indica* A. Juss. *J Basic Microbiol* **51**:550-556.

**Wakelin SA, Warren RA, Harvey PR, Ryder MH (2004).** Phosphate solubilization by *Penicillium* sp. closely associated with wheat roots. *Biology and Fertility of Soils* **40**: 36-43.

**Wang Y, Brown HN, Crowley DE, Szaniszlo PJ (1993).** Evidence for direct utilization of a siderophore, ferrioxamine B in axenically grown cucumber. *Plant Cell Environ* **16**: 579–585.

**Wani PA, Zaidi A, Khan AA, Khan MS (2005).** Effect of phorate on phosphate solubilization and indole acetic acid releasing potentials of rhizospheric microorganisms. *Ann. Plant Protect. Sci.* **13**: 139-144.

**Wettasinghe M, Shahidi F (1995).** Antioxidant and Free Radical Scavenging Properties of ethanolic Extracts of Defatted Borage (*Borago officinalis*L.) Seeds. *Food Chem* **67**:399.

**Whitelaw MA (2000).** Growth promotion of plants inoculated with phosphate solubilizing fungi. *Adv. Agron.* **69**: 99-151.

**Whitelaw MA, Harden TJ, Helyar KR (1999).** Phosphate solubilizationin solution culture by the soil fungus *Penicillium radicum*. *Soil Biology & Biochemistry* **31**: 655–665.

**Wilson MK, Abergel RJ, Arceneaux JE, Raymond KN,Byers BR (2010).** Temporal production of the two *Bacillus anthracis* siderophores, petrobactin and bacillibactin. *Biometals* **23**: 129–134.

**Xu X, Lin L (2013).** Indole-3-acetic acid production by endophytic *Streptomyces* sp. En-1 isolated from medicinal plants. *Curr Microbiol* **67**:209-217.

**Yan Y, Yang J, Dou Y, Chen M, Ping S, Peng J, Lu W, Zhang W, Yao Z, Li H, Liu W, He S, Geng L, Zhang X, Yang F, Yu H, Zhan Y, Li D, Lin Z, Wang Y, Elmerich C, Lin M, Jin Q (2008).** Nitrogen fixation island and rhizosphere competence traits in the genome of root associated *Pseudomonas stutzeri* A1501. *PNAS* **105** (21):7564–7569.

**Yanni YG, Rizk RY, Corich V, Squartini A, Ninke K, Philip-Hollingsworth S, Orgambide G, de Bruinj F, Stoltzfus J, Buckley D, Schmidt TM, Mateos PF, Ladha JK, Dazzo FB (1997).** Natural endophytic association between *Rhizobium leguminosarum* bv.trifolii and rice roots and assessment of its potential to promote rice growth. *Plant Soil* **194**:99–114.

**Yoneyama T, T Muraoka, TH Kim, EV Dacanay, Y Nakanishi (1997).** The natural <sup>15</sup>N abundance of sugarcane and neighbouring plants in Brazil, the Philippines and Miyako (Japan). *Plants & Soils* **189**:239-244.

**You C, Zhou F (1989).** Non-nodular endorhizospheric nitrogen fixation in wetland rice. *Can. J. Microbiol.* **35**: 403-408.

**Yu J, Yu ZH, Fan GQ, Wang GH, Liu XB (2016).** Isolation and Characterization of Indole Acetic Acid Producing Root Endophytic Bacteria and Their Potential for Promoting Crop Growth. *J. Agr. Sci. Tech.* **18**: 1381-1391.

**Zaidi A, Khan MS, Ahemad M, Oves M (2009).** Plant growth promotion by phosphate solubilizing bacteria. *Acta Microbiol. Immunol. Hungarica* **56**:263-284.

**Zambare MR, Bhosale UA, Somani RS, Yegnanarayan R, Talpate KA (2011).** *Achyranthes aspera* (Agadha): Herb That Improves Pancreatic function in Alloxan Induced Diabetic Rats. *Asian J Pharm Biol Res.* **1(2)**:99-104.

**Zehr JP, Capone DG (1996).** Problems and promises of assaying the genetic potential for nitrogen fixation in the marine environment. *Microb Ecol.* **4**:263–281.  
doi:10.1007/BF00183062.

**Zehr JP, Jenkins BD, Short SM, Steward GF (2003).** Nitrogenase gene diversity and microbial community structure: A cross-system comparison. *Environ Microbiol.* **4**:539–554. doi: 10.1046/j.1462-2920.2003.00451.x.

**Zhang H, Sun Y, Xie X, Kim MS, Dowd SE, Pare PW (2008).** A soil bacterium regulates plant acquisition of iron via deficiency-inducible mechanisms. *Plant J* **58**:568–577.

**Zhang W, Krohn K, Draeger S, Schulz B (2008).** Bioactive isocoumarins isolated from the endophytic fungus *Microdochium bolleyi*. *J. Nat. Prod.* **71**: 1078–108

**Zhang Z, Schwartz S, Wagner L, Miller W (2000).** A greedy algorithm for aligning DNA sequences. *J Comput Biol* **7**:203–214.

**Zhou K, Binkley D, Doxtader KG (1992).** A new method for estimating gross phosphorus mineralization and immobilization rates in soils. *Plant Soil* **147**:243–250.

**Zimmer W, Wesche M, Timmermans L (1998).** Identification and isolation of the indole-3-pyruvate decarboxylase gene from *Azospirillum brasilense* Sp7: sequencing and functional analysis of the gene locus. *Curr Microbiol* **36**:327–331.