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评述与展望

Review and Progress

驱虫苋根：一种潜在有用的药用植物

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摘　要　在各种微生物之间的多重耐药性的出现，限制了抗菌药物的选择，并导致的发病率和死亡率提升。细菌，真菌，细菌 rasites 和病毒引起人类和动物的许多感染，由于其耐大多数可用的抗菌药物，现在很多难以治疗。这就是现在医疗机构严重关注在市场上可用合成的经批准对症药物的原因。研究严格研究说明书 VES 对抗抗菌药物，其中包括合成抗生素制剂，治疗感染和分析各种活动的效用评估的纳米粒子药用植物提取物的药用价值。本文综述了驱虫苋根潜在的药用价值。

关键词　驱虫苋根, 对驱虫苋根药用性能, 对驱虫苋根植物提取物的抗菌活性

Aerva Lanata (L.) Juss. ex Schult.: a Potentially Useful Medicinal Plant

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Abstract　Emergence of multi-drug resistance among various microorganisms has limited the choice of antimicrobial agents and has been responsible for severe morbidity and mortality. Bacteria, fungi, parasites and viruses cause many infections in both human and animals which are now difficult to treat owing to their resistance to most of the available antimicrobial drugs. Significant time taken for the synthesis and availability of an approved allopathic drug in the market should be considered as a cause for serious concern in health care settings. Research is rigorously on for finding alternatives to allopathic antimicrobial agents, which include preparation of synthetic antibiotics, evaluating the nanoparticles for their utility in treating infections and analysing the activities of various plant extracts for their medicinal values. This review discusses the potential medicinal properties of *Aerva lanata*.

Keywords　*Aerva lanata*; Medicinal properties of *Aerva lanata*; Antimicrobial activity of *Aerva lanata* plant extracts

1 引言

多种微生物病原体间的多重耐药性的出现，已成为医疗界严重限制抗生素选择的一个重要原因。考虑到合成一个可行的抗菌药物可能要的几十年来临床试验，今天我们正在寻找抗菌药物的替代品(Kandi V, 2015)。我们应当时刻关注由于各种耐药机制，抗多种抗生素的微生物的产生和传播(超级细菌)。耐甲氧西林金黄色葡萄球菌(MRSA)，万古霉素肠球菌，金黄色葡萄球菌的 PP 和 Streptococcus spp，拥有新德里金属 β 内酰胺酶的细菌(NDM)编码的抗性基因，在许多细菌在肠道和那些存在我耐碳青霉烯类 n 环境(Pseudomonas spp 和鲍氏不动杆菌)是导致感染难以治疗的细菌(kalaskar and venkataramana, 2012; Ramana et al., 2008; Ramana et al., 2009; Ramana et al., 2013; Ramana et al., 2013a; Sharada et al., 2014)。驱虫苋根是一种药用植物属于家庭苋科，生长在印度的平原。驱虫苋根是一种多年生杂草，生长高达 2 米(30 厘米至 2 米)，目前主要分布在印度的平原，包括 Telangana，安得拉邦州，Tamilnadu 和卡纳塔克邦。在其他国家，这种植物生长包括斯里兰卡、埃及、阿拉伯地区、非洲地区、爪哇和菲律宾(Baladrin and Kloeke, 1988; Kareru et al., 2008)。

植物无性繁殖的主要瓶颈发生在使用物理/化学诱变剂处理后突变体出现部分嵌合的时候。虽然如果发生完全突变，可以隔离分支的一部分或整个分支，但很难隔离这些范围上有限的、可能只表达为一朵小花上有颜色条带的突变体/嵌合体(Mandal and Datta, 2005)。伴有再生体外实验的突变育种将会是有用的途径来建立纯的

2 驱虫苋根植物化学特征

对驱虫苋根的树枝从底部和叶片相对轮生，具绵状毛，无柄，几乎成新月形的，线性的，背面白色绵状毛，正面无毛，苞片和小苞片披针形，绒毛在出现较小的花枝(图 1)。花是非常小的，无梗，两性，出现绿色，暗白色的颜色和出现聚集在尖峰。驱虫苋根的根部产生樟脑的香味，被认为具有医学价值。驱虫苋根的绵毛优的提取物可生产多种植物化学物质，包括黄酮、皂苷、生物碱、甾体、catachins、香豆素、甾体、萜类、xanthoproteins，民蒽醌类、矿物、鞣质和酚类化合物。的作用，香豆的作用，isorhamentin 苷，O-酰基葡糖苷，β-谷甾醇、胡萝卜甙、丁香酸、香草酸、阿魏酸等苎麻，阿魏酸 homovanillylamine，水仙花和 aervitrine 是一些化学物质合成的茎、叶、花和驱虫苋根植物的根。

图 1 驱虫苋根的全株和花枝
Figure 1 The whole plant and the flowering branches of *Aerva lanata*

驱虫苋根的其他代谢产物(如绵毛优若藜植物)具有药用价值，包括棕榈酸、谷甾醇等，卅一烷，α-香树脂醇、白桦脂醇、山奈酚 3-rhamn-ogalactoside 和山柰酚 3(6“p-cou 马里兰州)葡萄糖苷、皂苷、糖，果糖、半乳糖、鼠李糖、甘露糖、木糖、阿拉伯糖和蔗糖，canthine 6-one 和 3β-咔啉影响丙酸、10 甲氧基 canthin 6-one(甲基 aervine)，10 氢氧 canthin 6-one(aervine)，10-o -β-基 oxycanthin 6-one(aervoside)和 6-甲氧基-β-咔啉 L 丙酸(aervolanine)(Cushnie and Lamb, 2005)(表 1)。

表 1 驱虫苋根的各种提取物的化学成分及药用性质
Table 1 Phytochemical composition and medicinal properties of various extracts of *Aerva lanata*

Phytochemical family Types	Name of the compound	Medicinal properties
Carbohydrate, Flavonoids, saponins, alkaloids, steroids, catachins, coumarins, steroids, terpenoids, xanthoproteins, minerals, anthra quinones, tannins and phenolic compounds.	Fructose, galactose, rhamnose, mannose, xylose, arabinose sucrose, tiliroside, coumaryl tiliroside, isorhamentin glycoside, O-acyl glycosides, β-si-tosterol, daucosterol, syringic acid, vanillic acid, feruloyl tyramine, feruloyl homovanillylamine, narcissi and aervitrine, canthine 6-one and 3-β-c arboline 1-yl propionic acid, 10-methoxy canthin 6-one (methyl aervine), 10-hydroxy-canthin 6-one (Aervine), 10-O- β-D-glucopyranosyl oxycanthin 6-one (Aervoside) and 6-methoxy- β-carboline l propionic acid (Aervolanine), include sitostreol palmitate, hentriacontane, D-glucoside, α-amyrin, betulin, kaempferol 3-rhamnogalactoside and kaempferol 3- (6” p-coumaryl) O-glucoside, saponins	Anti-oxidant properties, nephroprotective values, hepatoprotective properties, anti lithiatic activities (increased urinary excretion of calcium, oxalate and uric acid crystals), anti-diabetic/hypoglycaem ic activities, anti-hyperlipidemic activities, anti-cancer properties, diuretic properties, anti-inflammatory activities, cytotoxic nature, anti-HIV activity and antimicrobial properties

3 驱虫苋根植物提取物的药用价值的研究

分析驱虫苋根植物的各种植物提取物的其抗氧化性能，包括保护性能、抗结石活动(增加尿酸化钙、草酸和尿酸结晶)、抗糖尿病、降血糖活性(Agrawal, 2013)，抗 hyperlipidemicactivities 和抗癌特性。其他药理学辅导活动 F Aerva 绵毛优若藜植物提取物的研究包括利尿剂、抗炎性活动、细胞毒性，抗 HIV(Gujjeti and Mamidala, 2014)和抗菌性能(Vetrichelvan et al., 2000; Appia Krishnan et al., 2009; Tushar et al., 2008; Nevin, 2003; Vetrichelvan and Jegadeesan, 2002; Manoharan et al., 2008; Soundararajan, 2006; Chouwdhury, 2002)。

传统的驱虫苋根植物提取物用于治疗头痛、黄疸、霍乱，减少在正常分娩出血，治疗烧伤和皮肤状况，尿和胆汁的音调、鼻出血、咳嗽、支气管炎、腹泻、痢疾、风湿性关节炎、骨折、蝎子蜇伤，蛇咬伤(Kakrani and Sulja, 1994; Vedavathy and Rao, 1990; Gupta and Neeraj, 2004; Sankaran and Alagesaboopathi, 1995; Yoga Narasimhan et al., 1979; Upadhyay, 1998; Singh and Pandey, 1980; Mukerjee et al., 1984; Sikarwar and Kaushik, 1993; Girach et al., 1994; Shah and Gopal, 1985; Mohanty et al., 1996; Deepak et al., 2009)。

只有少数的研究文献中，有对该药用植物的不同提取物的抗菌性能做了相关研究(Muthukumaran et al., 2001; Srujana et al., 2012; Kalirajan et al., 2013; Duraipandiyan et al., 2006; Rajesh et al., 2010; Malar et al., 2011)。

4 讨论

分驱虫苋根也被称为 Aerva 线虫，Illecebrum lanatum 和 Achyranthes lanata，俗称山结草。大约有 28 的种属鉴定 Aerva(Chawla et al., 2012)。药用植物局部命名为 Pindidonda，Chaya，Gorakh buti，Gorakh，泰卢固语，大麻，kapurijad，印地语和 Khari 幼稚 andulinai Khali，刺入 Tamil，Kapurmadhuri 在马拉、Bili Himdisoppu 在卡纳达语、Cherula 语、拉贾斯坦的 Bhuyi、Chaya 在 Bengali，Bhui 和杰瑞在信德，Polpala 在僧伽罗人，Kinongo 在 Swahili 和 Gorakshaganja，Pashanabheda 在，Ashmahabhedah，在 Sanskrit 和 Shatakabhedi。驱虫苋根历来被用于治疗各种疾病的药物。增加抗菌活性的植物提取物的驱虫苋根观察对一些潜在的细菌 L 的病原体相比，标准的药物测试突出他们的使用在治疗人类感染。对驱虫苋根植物提取物抗真菌特性与对照药物相比并发现有类似或增加的活动。先前的研究已报道的驱虫苋根对多药抵抗整个植物提取物的抑菌活性斯丹德(大肠埃希菌、铜绿假单胞菌的超广谱β-内酰胺酶(ESBL)生产商)和常见的人类病原体(沙门氏菌、甲型副伤寒沙门氏菌，沙门氏菌副模嗨 B、变形杆菌属、Streptococcus spp、Klebsiella spp、Serretia marcescens、大肠埃希菌、Pseudomonas aeruginosa)。研究表明，乙醇提取物的抑制对 Klebsiella pneumoniae 最大的区域显示，奇异变形杆菌和 Pseudomonas aeruginosa(ESBL)。它也被观察到，乙醇提取行为是无效的对甲型副伤寒沙门氏菌的研究结果还表明，苯和石油醚提取物是无效的对许多细菌种类(Murugan et al., 2014)。

5 结论

在现有非常有限的研究中，评估了驱虫苋根各种植物提取物在体内的抗菌性能的潜力。鉴于新发现的人类感染的多耐药之间的各种微生物，对驱虫苋根植物提取物的抑菌活性广泛的研究是必要的。未来的研究应包括评估其抗菌活性，无论是在体外和体内，来证明多重耐药菌引起严重感染和其他潜在的各种植物提取物制剂的药用价值。

参考文献

Bala Agrawal R., Sethiya N.K., and Mishra S.H., 2013, Antidiabetic activity of alkaloids of Aerva lanata roots on streptozotocin-nicotinamide induced type-II diabetes in rats, Pharmaceutical Biology, 51(5): 635-642
http://dx.doi.org/10.3109/13880209.2012.761244

Appia K.G., Ravi V.K., Nandy B.C., and et al., 2009, Hypoglycemic and antihyperlipidemic effect of ethanolic extract of aerial parts of A. lanata Linn. In normal and alloxan induced diabetic rats, International Journal of Phamaceutical Sciences and Drug Research, 1(3):191-194.

Baladrin M.J., and Kloeke J.A., 1988, Medicinal, aromatic and industrial materials from plants, Berlin: Springer, Verlag, pp.1-36

Cushnie T.P.T., and Lamb A.J., 2005, Antimicrobial activity of flavonoids, International Journal Antimicrobial Agents, 26: 343-356
http://dx.doi.org/10.1016/j.ijantimicag.2005.09.002

Deepak K, Prasad D.N, Jyoti Prakash and et al., 2009, Anti asthmatic activity of ethanolic extract of A. lanata Linn. Pharmacologyonline, 2:1075-1081

Dulaly C., 2002, Antimicrobial activity and cytotoxicity of Aerva lanata, Fitoterapia, 73(1): 92-94
http://dx.doi.org/10.1016/S0367-326X(01)00369-0

Duraipandiyan V., Ayyanar M., and Ignacimuthu S., 2006, Antimicrobial activity of some ethnomedical plants used by Paliyar tribe from Tamilnadu, India, BMC Complem Altern Med., 6: 35
http://dx.doi.org/10.1186/1472-6882-6-35

Girach R.D., Aminuddin S.P.A., and Khan S.A., 1994, Traditional plant remedies among the Kondh of district Dhenkal (Orissa), Int. J. Pharmacogn, 32: 274-283
http://dx.doi.org/10.3109/13880209409083005

Guha B.D.N., 1984, Flora of Murshidabad district, West Bengal, India, Scientific Publishers, Jodhpur, pp.262

Guha B.D.N., Sena S.P., and Pal D.C., 1999, A lexicon of medicinal plants in Ind, Vol 1, Naya Prokash, Calcutta, pp.61-62

Gujjeti R.P., and Mamidala E., 2014, Anti-HIV activity and cytotoxic effects of Aerva lanata root extracts; American Journal of Phytomedicine and Clinical Therapeutics, 2(7): 894-900

Gupta A.K., and Neeraj T., 2004, Reviews on Indian Madicinal plants, Vol 1, ICMR, New Delhi, pp.338-340

Kakrani H.K.N., and Sulja A.K., 1994, Traditional treatment through herbs in Kutch district, Gujarat state, India, part II, Analgesic, anti-inflammatory, anti rheumatic, antiarthritic plants, Fitoterapia, 65: 427-430

Kalaskar A., and Venkataramana K., 2012, Determination of antimicrobial resistance pattern and production of extended-spectrum β-lactamases amongst Escherichia coli and Klebsiella pneumoniae from clinical isolates, J. Med. Bacteriol, 1(2): 17-24

Kalirajan A., Narayanan K.R., Ranjitsingh A.J.A., Ramalakshmi C., and Parvathiraj P., 2013, Bioprospecting medicinal plant Aerva lanata Juss. Ex Schult, flowers for potential antimicrobial activity against clinical and fish-borne pathogens, Indian Journal of Natural Products and resources, 4(3): 306-311

Kandi V., 2015, Antimicrobial properties of nanomolecules: potential candidates as antibiotics in the era of multi-drug resistance, Epidemiol Health, 37: e2015008
http://dx.doi.org/10.4178/epih/e2015008

Kareru P.G., Keriko J.M., Gachanja A.N., and Kenji G.M., 2008, Direct detection of triterpenoid saponins, in medicinal plants, African Journal of Traditional, Complementary and Alternative medicines, 5: 56-60
http://dx.doi.org/10.4314/ajtcam.v5i1.31257

Malar R.J.J., Johnson M., Mary U.M., and Arthy A., 2011, Antibacterial activity of ethanol extracts of selected medicinal plants against human pathogens, Asian Pacific J. Trop Biomed., 2011: S76-S78

Manoharan S., Jaswanth A., Sengottuvelu S., Nandhakumar J., Duraisamy R., Karthikeyan D., and Mallegaswari R., 2008, Hepatoprotective activity of Aerva lanata Linn. against paracetamol induced hepatotoxicity in rats, Res. J. Pharm. Tech., 1(4): 398-400

Mohanty R.B., Padhy S.N., and Dash S.K., 1996, Traditional phytotherapy for diarrhoeal diseases in Ganjan and Phulbani districts of south Orissa, India, Ethnobotany, 8: 60-65

Mukerjee T., Bhalla N., Singh A.G., and Jain H.C., 1984, Herbal drugs for urinary stones, Indian Drugs, 21: 224-228

Murugan M., and Mohan V.R., 2014, Phytochemical, FT-IR and antibacterial activity of whole plant extract of Aerva lanata (L.) Juss. Ex. Schult, Journal of Medicinal Plants Studies, 4(3): 51-57

Muthukumaran P., Shanmuganathan P., and Malathi C., 2001, Antoxidative and Antimicrobial study of Aerva lanata, Asian Journal of Biochemical and Pharmaceutical Research, 2(1): 265-271

Nevin K.G., 2003, Effect of Aerva lanata on solid tumor induced by Dla cells in mice, Fitoterapia, 74(6): 578-582
http://dx.doi.org/10.1016/S0367-326X(03)00148-5

Payal C., Amit C., Neeru V., and Sharma S.K., 2012, A review of chemistry and biological activities of the genus Aerva in a desert plant, Pharmaceutica Drug Research, 69(2): 171-177

Rajesh R., Chitra K., and Paarakh P.M., 2010, In vitro antihelminthic activity of aerial parts of Aerva lana (L.) Juss. Ex Schult., Int. J. Pharm. Sci. Drug Res., 2(4): 269-271

Ramana K.V., and Rao R., 2009, Significance of screening for colonization and vancomycin resistance in Staphylococcus aureus isolated from anterior nares of school going children, Online J. Health Allied Scs., 8(3): 20

Ramana K.V., Kalaskar A., Rao M., and Rao S.D., 2013, Aetiology and Antimicrobial Susceptibility Patterns of Lower Respiratory Tract Infections (LRTI's) in a Rural Tertiary Care Teaching Hospital in Karimnagar, South India, American Journal of Infectious Diseases and Microbiology, 1(5): 101-105
http://dx.doi.org/10.12691/ajidm-1-5-5

Ramana K.V., Mohanty S.K., and Kumar A., 2008, In-vitro activities of current antimicrobial agents against isolates of pyoderma, Indian J. Dermatol. Venereol. Leprol, 74: 430
http://dx.doi.org/10.4103/0378-6323.42886

Ramana K.V., Rao R., Sharada C., Kareem M.A., Reddy L.R., and Ratna M.M.S., 2013a, Modified hodge test: a useful and the low cost phenotypic method for detection of carbapenemase producers in Enterobacteriaceae members, J. Nat. Sci. Biol. Med., 4: 346-348
http://dx.doi.org/10.4103/0976-9668.117009

Sankaran S., and Alagesaboopathi C., 1995, Some medicinal plants used by tribals of shervaroy hills, Tamilnadu, Flora Fauna, 1: 137-138

Shah G.L., and Gopal G.V., 1985, Ethomedical notes from the tribal inhabitants of north Gujarat (India), J. Econ. Taxon Bot., 6: 193-201

Sharada C.V., and Ramana K.V., 2014, Colistin, polymyxin B and tigecycline suspectibility to metallo betalactamase producing Acinetobacter baumannii isolated from tertiary health care hospital, American Journal of Microbiological Research, 2(2) : 60-62
http://dx.doi.org/10.12691/ajmr-2-2-3

Sikarwar R.L.S., and Kaushik J.P., 1993, Folk medicines of Morena district of Madhya pradesh, India, Int. J. Pharmacogn, 31: 283-287
http://dx.doi.org/10.3109/13880209309082954

Singh V., and Pandey R.P., 1980, Medicinal plantore of tribals of east-Rajasthan (India), J. Econ. Taxon Bot., 1: 137-147

Soundararajan P., 2006, Effect of Aerva lanata on calcium oxalate urolithiasis in rats, Indian Journal of Experimental Biology, 44: 981-986

Srujana M., Hariprasad P., Hindu M.J., Sravani P., Raju V., et al.,, 2012, In vitro antibacterial activity of stem extracts of Aerva lanata Linn., Int. J. Pharm. Sci. Rev. Res., 14 (1): 21-23

Tushar A., Mukh D., Bapuso V.Y., and et al., 2008, Anti hyperglycemic activity of alcoholic extract of A. lanata (L.) A.L. Juss Ex J.A., Schultes leaves in alloxan induced diabetic mice, J. Appl. Biomed, 6: 81-87

Upadhay O.P., Kumar K., and Tieari R.K., 1998, Ethno-botanical study of skin treatment uses of medicinal plants of Bihar, Pharmaceut. Biol, 36: 167-172
http://dx.doi.org/10.1076/phbi.36.3.167.6339

Vedavathy S., and Rao K.N., 1990, Nephro protectors folk medicine of rayalaseema, Andhrapradesh, Ancient Sci. Life, 9: 164-167

Vetrichelvan T., and Jegadeesan M., 2002, Anti-diabetic activity of alcoholic extract of Aerva lanata (L.) Juss. Ex Schultes in rats, J. Ethnopharmacol, 80: 103-107
http://dx.doi.org/10.1016/S0378-8741(01)00412-3

Vetrichelvan T., Jegadeesan M., Palaniappan M.S., Murali N.P., and Sasikumar K., 2000, Diuretic and anti-inflammatory activities of Aerva lanata in rats, Ind. J. Pharam. Sci, 60(4): 300-302

Yoga N.S.N., Bhat A.V., and Togunashi V.S., 1979, Medicinal plants from Mysore district, Karnataka, Indian Drug Pharmaceut. Ind., 14: 7-22

Yuldashev A.A., Yuldashev M.P., and Abdullabekova V.N., 2002, Components of Aerva lanata, Chem. Nat. Comp, 38(3): 293-294
http://dx.doi.org/10.1023/A:1020448531522
http://dx.doi.org/10.1023/A:1020400615593