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PHARMACOGNOSY: FACTS AND FUTURE

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COMMENTARY

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INTRODUCTION

Pharmacognosy, derived from the Greek words "pharmakon" (drug) and "gnosis" (knowledge), is perhaps the oldest trendy science, and customarily the study of crude medication of plant and animal origin [1,2].

The history of herbal medication is as recent as human civilization. Herbal medicines as the major remedy in ancient system of medicine are employed in medical practices since antiquity [3]. The documents many of which are of great antiquity, unconcealed that plants were used medicinally in china, India, Egypt and Greece long before the beginning of the common era. One amongst the foremost notable living remnants is *papyrus Ebers*, sixty feet long and a foot wide that may be a sixteenth xerophile BC [4-8].

Pharmacognosy will be outlined because the science of biogenic or naturally derived medication, prescription drugs, and poisons, and it incorporates varied fashionable analytical techniques to evidence and internal control of crude medication in addition as pure active extracts, fractions, and elements, and even healthful foods [9-13]. Drug use from healthful plants has advanced from the formulation of crude medication to the isolation, identification, and assessment of bioactivity of active compounds in drug discovery [14,15]. Pharmacognosy involves the broad study of natural product from varied sources together with plants, bacteria, fungi, and marine organisms. Asian nation flavouring medicines are the bases of treatment and cure for varied diseases in ancient strategies like Ayurveda, Unani and Sidha [16-21].

In Asian countries, particularly for the agricultural population, flavouring medication acquire the primary selection for treatment [22]. The World Health Organization (WHO) estimates that eighty Percent of the population of some Asian and African countries presently uses flavouring medicines for a few side of primary health care [23-30].

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Pharmacognosy, which accurately means that finding out medications of natural sources, has been a district of medical arts and sciences since mankind initiate to treat sicknesses [31-33]. To induce a correct perspective concerning this science that deals with plant animal, mineral and different natural medications, it's very useful to research the historical aspects of this science and to acknowledge the pioneers of this field [34-40].

FACTS

During the past 50 years there is advancement in the chemical and biological techniques of analysis that has transformed research in pharmacognosy. Natural medicines are accustomed enhance human and veterinary health since past times and also the success of recent life science mostly depends on medication originally obtained from natural resources [41-50].

The conventional medical practices adopted for identification and authentication of natural remedies eventually framed the botanico-chemical approach to Pharmacognosy throughout the 19th century. However, the last 200 years witnessed a considerable metamorphosis within the principles and practices of Pharmacognosy and it's become a vital domain of recent pharmaceutical science as a multidisciplinary high-tech science of natural medicines. In a very modern context, the systematic study of natural medicines in terms of purity, potency, consistency and safety became the foremost problems in Pharmacognosy [51-56]. Moreover, most of the current day's drug discoveries are progressively adopting ancient medication based mostly approaches to extend results and to handle safety issues. Thus, Clinical Pharmacognosy, Analytical Pharmacognosy and Industrial Pharmacognosy are established as specialised and skilled offshoots of Pharmacognosy to fulfill the modern advancements within the field of Pharmacognosy [57-65].

SCOPE

Plant species could also be take into account as a synthesis and for the chemical compounds example proteins, carbohydrates, and fats that square measure used as food by the animals and humans, however additionally for an enormous range of compounds as well as alkaloids, terpenoids, flavonoids, glycosides etc. that exert definite physiological effects. These chemical compounds square measure principally answerable for the required useful properties [66-70].

PC has additionally seen plenty of ups and downs driven by the expansion of pharmaceutical business, dynamical client habits and wishes, and up to date client movement toward the employment of natural materials. Pharmacognosy has played a crucial role within the discovery and development of latest medication and therapies, and has been continued to try and do thus even these days. It additionally shaped the idea of the event of the topic "Pharmacy" [71-76].

Herbal medication have gained importance in recent years because of their effectuality and cost effectiveness. The systematic study of flavorer remedies offers pharmacognosy teams a lovely new space of analysis, starting from work the biologically active principles of phytomedicines and their mode of action and potential drug interactions, to

internal control, and involvement in clinical trials. fashionable assemblage still contains a minimum of twenty fifth medication derived from plants and lots of others that are artificial analogues engineered on paradigm compounds isolated from plants [77-81].

Prevalence is unceasingly increasing in each developing and developed countries as a result of their natural origin and lesser facet effects. Currently a day's drug discovery from medicative plants involves a multiple approach of biology, phytochemical, biological, and molecular techniques. it's evident that drug discovery from medicative plants give new and necessary leads against numerous medicine targets together with cancer, HIV or AIDS, Alzheimer's, malaria, and pain. Many natural product medication of plant origin have either recently been introduced are presently concerned in late-phase clinical trials [82-87].

CONCLUSION

Pharmacognosy isn't an issue of the past, however its evolved and developed over the years to adapt itself with the ever-changing surroundings, and is currently appropriate meet the challenges of the current and also the way forward for drug discovery and development. Thus, the importance of *Pharmacognosy* in *Pharmacy* cannot be overemphasized.

REFERENCES

1. UNESCO. Culture and Health. Orientation Texts- World Decade for Cultural Development 1988-1997. Paris, France. 1996
2. UNESCO Terminal Report: Promotion of Ethnobotany and the Sustainable Use of Plant Resources in Africa. Paris, France. 1998
3. Ibrahim Singab ANB. Medicinal & Aromatic Plants. Medicinal Aromatic Plants. 2012; 1:e109.
4. Berger M. Traditional medicine: a clear and present danger? South African J Sci 2006;102: 178-179.
5. Huffman MA. Animal self-medication and ethno-medicine: exploration and exploitation of the medicinal properties of plants. Proc Nutr Soc. 2003; 62: 371-381.
6. Kuete V and Efferth T. Cameroonian medicinal plants: pharmacology and derived natural products. Front Pharmacol. 2010;1: 123.
7. Kuete V, Ngameni B et al. Cytotoxicity and mode of action of four naturally occuring flavonoids from the genus dorstenia: gancaonin q, 4-hydroxylonchocarpin, 6-prenylapigenin, and 6,8-diprenyleriodictyol. Planta Med. 2011; 77: 1984-1989.
8. Kuete V, Wiench B et al. Antibacterial Activity and Cytotoxicity of Selected Egyptian Medicinal Plants. Planta Med. 2011.
9. Efferth T, Miyachi H and Bartsch H. Pharmacogenomics of a traditional Japanese herbal medicine (Kampo) for cancer therapy. Cancer Genomics Proteomics. 2007a; 4: 81-91.
10. Efferth T. Pharmaceutical biology of traditional Chinese medicine for cancer therapy. In: M Eddouks (Ed.). Handbook of Ethnopharmacology, Research Signpost, Kerala, India. 2008.
11. Konkimalla VB and Efferth T. Molecular mechanisms and interactions responsible for radio- and chemoresistance of tumors and their modulation by natural products from Ayurveda In: R. Arora (Ed.) Herbal

medicine. A cancer chemopreventive and therapeutic perspective. Jaypee Brothers Medical Publishers Pvt. Ltd, New Delhi, St. Louis (USA). 2010.

12. Sudakin DL. Biopesticides. Toxicol Rev. 2003; 22: 83-90.

13. Raskin I and Ripoll C. Can an apple a day keep the doctor away? Curr Pharm Des. 2004; 10: 3419-3429.

14. Saklani A and Kutty SK. Plant-derived compounds in clinical trials. Drug Discov Today. 2008;13: 161-171.

15. Efferth T and Koch E (2011) Complex interactions between phytochemicals. The multi-target therapeutic concept of phytotherapy. Curr Drug Targets 12: 122-132.

16. Van Wyk BE, Wink M. Medicinal plants of the world. Pretoria, Briza. 2004.

17. Wagner H and Ulrich-Merzenich G. Synergy research: approaching a new generation of phytopharmaceuticals. Phytomedicine. 2009; 16: 97-110.

18. Sertel S, Fu Y et al. Molecular docking and pharmacogenomics of vinca alkaloids and their monomeric precursors, vindoline and catharanthine. Biochem Pharmacol. 2011; 81: 723-735.

19. Li JWH and Vederas JC. Drug discovery and natural products: end of an era or an endless frontier? Science. 2009; 325: 161-165.

20. Koehn FE and Carter GT. The evolving role of natural products in drug discovery. Nat Rev Drug Discov. 2005; 4: 206-220.

21. Newman DJ and Cragg GM. Natural products as sources of new drugs over the last 25 years. J Nat Prod. 2007; 70: 461-477.

22. Schmidt BM, Ribnicky DM, Lipsky PE and Raskin I. Revisiting the ancient concept of botanical therapeutics. Nat Chem Biol. 2007; 3: 360-366.

23. Efferth T. Molecular pharmacology and pharmacogenomics of artemisinin and its derivatives in cancer cells. Curr Drug Targets. 2006; 7: 407-421.

24. Efferth T, Fu YJ, et al. Molecular target-guided tumor therapy with natural products derived from traditional Chinese medicine. Curr Med Chem. 2007; 14: 2024-2032.

25. Efferth T, Li PC, Konkimalla VS and Kaina B. From traditional Chinese medicine to rational cancer therapy. Trends Mol Med. 2007; 13: 353-361.

26. Romero MR, Serrano MA, Efferth T, Alvarez M and Marin JJ. Effect of cantharidin, cephalotaxine and homoharringtonine on "*in vitro*" models of hepatitis B virus (HBV) and bovine viral diarrhoea virus (BVDV) replication. Planta Med. 2007; 73: 552-558.

27. Fu Y, Li S, et al. Medicinal chemistry of paclitaxel and its analogues. Curr Med Chem. 2009; 16: 3966-3985.

28. Efferth T. Cancer therapy with natural products and medicinal plants. Planta Med. 2010; 76: 1035-1036.

29. Efferth T. Personalized cancer medicine: from molecular diagnostics to targeted therapy with natural products. Planta Med. 2010; 76: 1143-1154.

30. Mahady GB. Global harmonization of herbal health claims. J Nutr. 2001; 131: 1120S-1123S.

31. Waters MD and Fostel JM. Toxicogenomics and systems toxicology: aims and prospects. Nat Rev Genet. 2004; 5: 936-948.

32. Youns M, Hoheisel JD and Efferth T. Toxicogenomics for the prediction of toxicity related to herbs from traditional Chinese medicine. Planta Med. 2010; 76: 2019-2025.

33. Efferth Tand Kaina B. Toxicity of the antimalarial artemisinin and its derivatives. Crit Rev Toxicol. 2010; 40: 405-421.

34. Efferth Tand Kaina B. Toxicities by herbal medicines with emphasis to traditional Chinese medicine. Curr Drug Metab. 2011; 12: 989-996.

35. Eichhorn T, Greten HJ and Efferth T. Predictive toxicogenomics for phytotherapy. In: Shyur L-F (Ed.) Recent trends in Medicinal Plants Research. Elsevier, Oxford, UK (in press), 2012.

36. Nortier JL, et al. Urothelial carcinoma associated with the use of a Chinese herb (Aristolochia fangchi). N Engl J Med. 2000; 342: 1686-1692.

37. Arlt VM, Stiborova M and Schmeiser HH. Aristolochic acid as a probable human cancer hazard in herbal remedies: a review. Mutagenesis. 2002; 17: 265-277.

38. Kober M, Pohl K and Efferth T. Molecular mechanisms underlying St. John's wort drug interactions. Curr Drug Metab. 2008;9: 1027-1037.

39. Kraft TE, Parisotto D, Schempp C and Efferth T. Fighting cancer with red wine? Molecular mechanisms of resveratrol. Crit Rev Food Sci Nutr. 2009; 49: 782-799.

40. Reichling J, Schnitzler P, Suschke U and Saller R. Essential oils of aromatic plants with antibacterial, antifungal, antiviral, and cytotoxic properties-an overview. Forsch Komplementmed. 2009; 16: 79-90.

41. Astani A, Reichling J and Schnitzler P. Comparative study on the antiviral activity of selected monoterpenes derived from essential oils. Phytother Res. 2010; 24: 673-679.

42. Astani A, Reichling J and Schnitzler P. Screening for Antiviral Activities of Isolated Compounds from Essential Oils. Evid Based Complement Alternat Med. 2012.

43. Pohlit AM, et al. Patent literature on mosquito repellent inventions which contain plant essential oils-a review. Planta Med. 2011; 77: 598-617.

44. Efferth T, Herrmann F, Tahrani A and Wink M. Cytotoxic activity of secondary metabolites derived from Artemisia annua L. towards cancer cells in comparison to its designated active constituent artemisinin. Phytomedicine. 2011; 18: 959-969.

45. Sertel S, Eichhorn T, Plinkert PK and Efferth T. Cytotoxicity of Thymus vulgaris essential oil towards human oral cavity squamous cell carcinoma. Anticancer Res. 2011; 31: 81-87.

46. Sertel S, Eichhorn T, Plinkert PK and Efferth T. Chemical Composition and antiproliferative activity of essential oil from the leaves of a medicinal herb, Levisticum officinale, against UMSCC1 head and neck squamous carcinoma cells. Anticancer Res. 2011; 31: 185-191.

47. Yim VW, Ng AK, Tsang HW and Leung AY. A review on the effects of aromatherapy for patients with depressive symptoms. J Altern Complement Med. 2009; 15: 187-195.

48. Setzer WN. Essential oils and anxiolytic aromatherapy. Nat Prod Commun. 2009; 4: 1305-1316.

49. Hur MH, Lee MS, Kim C, Ernst E. Aromatherapy for treatment of hypertension: a systematic review. J Eval Clin Pract. 2012; 18: 37-41.

50. Tillett J and Ames D. The uses of aromatherapy in women's health. J Perinat Neonatal Nurs. 2010; 24: 238-245.

51. Lee YL, Wu Y, Tsang HW, Leung AY and Cheung WM. A systematic review on the anxiolytic effects of aromatherapy in people with anxiety symptoms. J Altern Complement Med. 2011; 17: 101-108.

52. Smith CA, Collins CT and Crowther CA. Aromatherapy for pain management in labour. Cochrane Database Syst Rev. 2011; 6 : CD009215.

53. Polonio Tand Efferth T. Leishmaniasis: drug resistance and natural products (review). Int J Mol Med. 2008; 22: 277-286.

54. Stoeva S, T Efferth T. Human Cytomegalovirus: Drug resistance and new treatment options using natural products. Molecular Medicine Reports. 2008; 1: 781-785.

55. Gehrig S and Efferth T. Development of drug resistance in Trypanosoma brucei rhodesiense and Trypanosoma brucei gambiense. Treatment of human African trypanosomiasis with natural products (Review). Int J Mol Med. 2008; 22: 411-419.

56. Gehrig S and Efferth T. Development of drug resistance in Trichomonas vaginalis and its overcoming with natural products. The Open Bioactive Compound Journal .2009; 2: 21-28.

57. Hupfeld J and Efferth T. Review. Drug resistance of human immunodeficiency virus and overcoming it by natural products. In Vivo. 2009; 23: 1-6.

58. Turschner S and Efferth T. Drug resistance in Plasmodium: natural products in the fight against malaria. Mini Rev Med Chem. 2009; 9: 206-2124.

59. Wohlfarth C and Efferth T. Natural products as promising drug candidates for the treatment of hepatitis B and C. Acta Pharmacol Sin. 2009; 30: 25-30.

60. Bechtle M, Chen S and Efferth T. Neglected diseases caused by bacterial infections. Curr Med Chem. 2010; 17: 42-60.

61. Nussbaum K, Honek J, Cadmus CM and Efferth T. Trypanosomatid parasites causing neglected diseases. Curr Med Chem. 2010; 17: 1594-1617.

62. Bamberger D, et al. Fighting mycobacterial infections by antibiotics, phytochemicals and vaccines. Microbes Infect. 2011; 13: 613-623.

63. MÃ¼llner A, et al. Chemistry and pharmacology of neglected helminthic diseases. Curr Med Chem. 2011; 18: 767-789.

64. Schleich K, NÃ¼rnberger C, Sobanski A and Efferth T. Vaccination and antiviral treatment of neglected diseases caused by flaviviral infections. Curr Med Chem. 2011; 18: 604-614.

65. Efferth T. Perspectives for globalized natural medicines. Chin J Nat Med. 2011; 9: 1-6.

66. Heubl G. New aspects of DNA-based authentication of Chinese medicinal plants by molecular biological techniques. Planta Med. 2010; 76: 1963-1974.

67. Efferth T, et al. Phytochemistry and pharmacogenomics of natural products derived from traditional Chinese medicine and Chinese materia medica with activity against tumor cells. Mol Cancer Ther. 2008; 7: 152-161.

68. Sertel S, et al. Pharmacogenomic identification of c-Myc/Max-regulated genes associated with cytotoxicity of artesunate towards human colon, ovarian and lung cancer cell lines. Molecules. 2010; 15: 2886-2910.

69. Kuete V and Efferth T. Pharmacogenomics of Cameroonian traditional herbal medicine for cancer therapy. J Ethnopharmacol. 2011; 137: 752-766.

70. Efferth Tand Greten HJ. Medicinal and Aromatic Plant Research in the 21st Century. Medicinal Aromatic Plants.2012; 1:e110.

71. Ibrahim Singab ANB.Medicinal & Aromatic Plants. Medicinal Aromatic Plants. 2012; 1:e109.

72. Hosni K. Medicinal and Aromatic Plants in Developing Countries. Medicinal Aromatic Plants. 2012; 1:e118.

73. Mamedov N. Medicinal Plants Studies: History, Challenges and Prospective. Med Aromat Plants. 2012; 1:e133.

74. Akerele O. Importance of medicinal plants: WHOâ€™s programme. In: Natural Resources and Human Health: plants of medicinal and nutritional value. Elsevier, Amserdam, Netherlands. 1992; 63-77.

75. Farnsworth NR and Soejarto DD. Global importance of medicinal plants. In: Conservation of Medicinal Plants. Cambridge University Press, UK. 1991; 25-52.

76. Padulosi S, Leaman D and Quek P. Challenges and opportunities in enhancing the conservation and use of medicinal and aromatic plants. J Herbs Spices Med Plants. 2002; 9: 243-267

77. De Padula, Bunyapraphatsara LS and Lemmens RHMJ. Plant Resources of South East Asia. PROSEA, Bogor, Indonesia. 1999; 21: 1.

78. Fransworth NR. Preclinical assessment of medicinal plants. Natural Resources and Human Health. Elsevier Science Publishers BV, 1992; 87-91.

79. Moerman DE. Native American Medicinal Plants: An Ethnobotanical Dictionary. Timber Press, Inc, Portland, USA. 2009.

80. Moerman DE. Medicinal Plants of Native America. Research Reports in Ethnobotany, Volume 1, University of Michigan Museum of Anthropolgy, Technical Reports No. 19, Ann Arbor, Michigan. 1986.

81. Shankar K and Liao LP. Traditional systems of medicine. Phys Med Rehabil Clin N Am. 2004; 15: 725-747.

82. Sumner J. The natural history of medicinal plants. Timber Press, Portland, USA. 2000.

83. Balick MJ and Cox PA. Plants, People, and Culture: The Science of Ethnobotny, Scientific American Library. 1997.

84. Zhu YP. Chinese Materia Medica Chemistry, Pharmacology and Applications. CRC Press, Taylor & Francis Group. 1998.

85. Lovkova M, et al.Why do plants cure? Nauka, Moscow, Russia. 1989.

86. Mamedov N and Craker L. Endemic species of *Artemisia* L. (*Asteraceae*) from Caspian Sea region as alternative sources for malaria treatment. Proceedings of the First International Medicinal and Aromatic Plants Conference on Culinary Herbs, Antalya, Turkey. Acta Horticulturae. 2008; 826: 277-280.

87. Kilham C. Tales from the Medicine Trail: Tracking Down the Health Secrets of Shamans, Herbalists, Mystics, Yogis, and Other Healers. (1st edn), Rodale Press, PA. 2000.