Therapeutic Role of Herbs in Human Parasitic Diseases

Essay
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List of abbreviations

%:	Percent
µg:	Microgram
µl :	Microliter
µm:	**µm:**Micrometer
ACE:	Angiotensin converting enzyme
ADI:	Average degree of infection
AIDS:	Acquired immunodeficiency syndrome
ALT:	Alanine transpeptidase
AME:	Aqueous methanolic extracts
AST:	Aspartate transpeptidase
ATP:	Adenosine triphosphate
C°:	Degree(s) Celsius
CL:	Cutaneous leishmaniasis
CNS:	Central nervous system
D:	Day
DAS:	Diallyl sulphide
DE:	Diammonium salt of embelin
DEC:	Diethyl carbamazine
Deet:	Diethyl toluamide
DEPA:	Diethylphenyl acetamide
DMP:	Dimethyl phthalate
DNA:	Deoxy ribo nucleic acid
DNase:	Deoxy ribo nuclease
DOC:	Drug Of Choice
DP:	Dorycnium pentaphylum
DR:	Dorycnium rectum

ELISA:	Enzyme linked immunosorbent assay
FDA:	Food and drug administration
Fig.:	Figure
G:	Gram(s)
GI:	Gastrointestinal
GIT:	Gastro intestinal tract
GMEC:	Geometric mean egg count
GOT:	Glutamate oxaloacetate transaminase
GPase:	Glycogen phosphorylase
GPT:	Glutamate pyruvate transaminase
GRAS:	Generally recognized as safe
GSase:	Glycogen synthase
GSE:	Grapefruit juice extract
HH:	Houttuyniae Herba
HK:	Hexokinase
HPV:	Human papilloma virus
Hr:	Hour
IHAT:	Indirect heamagglutination test
IL:	Interleukins
IM:	Intra muscular
IT:	Time of inactivation
IV:	Intra venous
KP:	Kalanchoe pinnata
KSK:	Karanja seed kernels
L:	Larvae
LAWS:	low aromatic white spirits
LC:	Lethal concentration
LD:	Lethal dose

LDH:	Lactate dehydrogenase
LP:	Lotus pedunculatus
MAC:	Macfadyena unguis cati
MDH:	Malate dehydrogenase
ME:	Malic enzyme
Mf:	Microfilaria
MIC:	Minimal inhibitory concentration
Min:	Minutes
Ml:	Milliliter
Mm:	Millimeter
MT:	Mineral turpentine
MWF:	Methanol water fraction
NAG:	N-acetyl glucosamine
NDGA:	Nacetyl-D-glucosamine
Nm:	Nanometer
NO:	Nitric oxide
OCP:	Onchocerciasis Control Programme
Oz:	Ounce
PABA:	Paraamino benzoic acid
PBMCs:	Peripheral blood mononuclear cells
PEPCK:	Phosphoenol pyruvate carboxykinase
PFK:	Phosphofructokinase
PI:	Post infection
PK:	Pyruvate kinase
PMN:	Polymorphonuclear leucocytes
PO:	Per os
POA:	Pentacyclic Oxindole Alkaloids

PPM:	Part per million
PR:	Pippali rasayana
RNA:	Ribo nucleic acid
RNase:	Ribo nuclease
Spp.:	Species
TAS:	Total antioxidant status
TBARS:	Thiobarbituric acid reactive substances
TTO:	Tea tree oil
WGA:	Wheat germ agglutinin
WHO:	World Health Organization
Wk:	Week

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Introduction

Parasitic diseases remain a major public health problem affecting hundreds of millions of people, particularly in tropical developing countries. The limited availability and affordability of pharmaceutical medicines mean that the majority of the world's population depends on traditional medical remedies, and it is estimated that some 20.000 species (spp.) of higher plants are used medicinally throughout the world ***(Tagboto and Townson, 2001)***. The traditional medicines hold a great promise as source of easily available effective antihelminthic agents to the people. Several plants or plant-derived preparations are consumed to cure helminthic infections ***(Akerele, 1990).*** The origin of many effective drugs is found in traditional medicine practices for their proclaimed antihelminthic efficacy ***(Tangpu and Yadav, 2004)***.

Led by instinct, taste, and experience, primitive men and women treated illness by using plants that were not part of their usual diet. Physical evidence of use of herbal remedies goes back some 60.000 years ***(Solecki, 1975).*** In a cave in northern Iraq, scientists found ordinary human bones surrounded by extraordinary quantities of plant pollen that could not have been introduced accidentally at the burial site. Someone in the small cave community had consciously gathered eight species of plants to surround the dead man. Seven of these are medicinal plants still used throughout the herbal world ***(Bensky and Gamble, 1993).*** All cultures have long folk medicine histories that include the use of plants. Even in ancient cultures, people methodically and scientifically collected information on herbs and developed well

defined herbal pharmacopoeias. Eighty percent (%) of the world population use herbal medicine for some aspect of primary health care. Herbal medicine is a major component in all indigenous traditional medicine and is a common element in Ayurvedic, homeopathic, naturopathic, traditional oriental, and Native American Indian medicine ***(Farnsworth et al., 1985)***.

Many well known drugs listed in the modern pharmacopoeia have their origins from nature, including, for example, quinine from the bark of the ***Cinchona*** tree for the treatment of malaria, which has been followed by the subsequent development of the synthetic derivatives chloroquine, amodiaquine, primaquine and mefloquine. More recently, the wider recognition of the antimalarial activity of artemisinin from the herb ***Artemisia annua*** has led current research to focus on the development of a large number of synthetic and semi synthetic compounds, which are more active than artemisinin. There is an increasing awareness of the potential of natural products, which may lead to the development of much needed new antiparasitic drugs ***(Tagboto and Townson, 2001)***.

The sophistication of herbal remedies used around the world varies with the technological advancement of countries that produce and use them. These remedies range from medicinal teas and crude tablets used in traditional medicine to concentrated, standardized extracts produced in modern pharmaceutical facilities and used in modern medical systems under a physician's supervision. A guiding principle should be that if the product has been traditionally used without demonstrated harm, no specific restrictive regulatory action should be undertaken unless new evidence demands a revised risk-benefit assessment. Prolonged and apparently uneventful use of a

substance usually offers testimony of its safety. For treatment of minor disorders and for nonspecific indications, some relaxation is justified in the requirements for proof of efficacy, taking into account the extent of traditional use; the same considerations may apply to prophylactic use ***(WHO, 1991)***.

The WHO guidelines cover two kinds of combination products: Old combination products that are already used in traditional medicine and new combination products which are well known substances that are now being used ***(Schuster, 2001)***.

Herbs and herbal preparations generally are self-administered. Often they are purchased through native herbalists who prescribe one or more herbs or preparations on the basis of medical and health approaches that often include concepts of attaining balance in the client's body, psychology, and spirit. Consequently, it is often difficult to assess the relative value of herbal remedies versus prescription drugs on a one to one basis. Indeed, herbal remedies of all types, including those from China, are composed of a multitude of ingredients whose interactions with the body are exceedingly complex. A high level of sophistication of research methodology is necessary to describe the interaction between the human body and substances as complex as those contained in many herbal remedies ***(Bensky and Gamble, 1993)***.

The increased use of plant medicines has potential for improving public health and lowering health care costs. Phytomedicines, if combined with the preventive model of medical practice, could be among the most effective, practical ways to shift the