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Evolution of Antibacterial Activity of some medicinal plants on common enteric food borne pathogens with special references to Andrographis paniculata and other medicinal plants

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Abstract:

Many medicinal plant shows antibacterial activity against food borne pathogens. In this present work we study about different medicinal plant working for common enteric food borne pathogens specially we have most important plant A. paniculata that is known as King of bitters. They contain different organic mixtures with antibacterial and antifungal exercises, that could be formed into drugs. The quest for novel antimicrobial mixtures, particularly against multidrug-safe microorganisms from sweet-smelling and home grown plants is a fundamental logical exploration line. Be that as it may, the antimicrobial properties of a few therapeutically significant plants from different nations are at this point unclear. This audit intends to give a state-of-the-art report on the antimicrobial action of restorative plants endemic to many countries broadly utilized in customary medication. Andrographis paniculata, regularly known as creat or green chireta, is a yearly herbaceous plant in the family Acanthaceae, local to India and Sri Lanka. It is generally developed in Southern and Southeastern Asia, where it has been customarily used to treat contaminations and a few sicknesses. This review expects to research antibacterial action of a few restorative plants on normal intestinal food borne microorganisms with extraordinary reference to andrographis paniculata and other therapeutic plants..The medicinal plants in the paper are Andrographis paniculata, Coleus forskohlii, Curcuma caesia, Cureuma amada, Costus igneous Costus – specious. Enteric bacteria are major causes of food borne illness and gastro intestinal problems in the developing and under developed countries around the world. In some people, especially children, haemolytic uremic syndrome (HUS) can occur from infection by a particular strain by E. coli 015.117 can lead to kidney failure and death. All medicinal plants described have phenolic content and hence they have free radical scavenging property.

Keyword: Andrographis paniculata , antibacterial activity , haemolytic uremic syndrome, ABTS (2, z^1 – azobis -3), Folin – Cio Calteau reagent.

Introduction:

Medicinal plants, have been utilized in customary medication rehearses since long ancient occasions. Restorative plants amalgamation many substance compounds for capacities including protection against bugs, parasites, illnesses and herbivorous warm blooded creatures. Antibacterial action additionally asess from a few restorative plants on normal intestinal food borne microorganisms. Andrographis paniculata, ordinarily known as creat or green chirayta, is a yearly herbaceous plant in the family Acanthaceae, local to India and Sri Lanka. It is generally developed in Southern and Southeastern Asia, a few therapeutic plants on normal intestinal food borne microbes with unique reference to andrographis paniculata and other restorative plants. Most normal specialists are Escherichia coli and salmonella typhinmurium. Indications of food disease range from stomach upset, loose bowels, regurgitating, stomach issues and fever. In certain individuals, particularly kids, haemolytic uremic condition (HUS) can happen from disease by a specific strain by E. coli 015.117 can prompt kidney disappointment and demise. NIH (2003).

Additionally, therapeutic plants related with organisms, which assume a fundamental part in plant wellbeing, orchestrate different naturally dynamic mixtures because of the advantageous interaction (Egamberdieva et al. 2020; Rusatmova et al. 2020; Musa et al. 2020). It has been demonstrated that therapeutic plants with antimicrobial action support more hostile endophytic microorganisms against human pathogenic organisms. Numerous therapeutic plants contain helpful medicinal balms with antimicrobial properties (Nikolic et al. 2014). In a prior study, the plant concentrates of Zingiber officinales and Thymus kotschyana smothered the development of human pathogenic microbes Staphylococcus aureus and Escherichia coli Qader et al. (2013). Comparative reports showed an inhibitory movement of plant concentrates of Z. officinales and Allium sativum against Staphylococcus aureus (Betoni et al. 2006). The plant concentrates of Boerhaavia diffusa, Tribulus terrestris, and Soymida febrifuga repressed E. coli, Enterococcus faecalis, Klebsiella oxytoca and S. aureus (Mishra et al. 2017). In the momentum period, a few new irresistible infections seem around the world. Accordingly, there is an incredible need to find new naturally dynamic mixtures from home grown plants and foster novel medications. also these endemic plants might contain chemically fundamental mixtures. As indicated by Gaipova and Kariyeva (2018), during the years 2015–2018, 46 regular items dependent on restorative spices Among them, Origani vulgaris, Ziziphora pedicellata, Aerva lanata, Calendula officinalis, and Chamomilla officinalis K.Koch based items are broadly utilized.Vehicle of transmission in these etiologic agents are mainly Water and Food. Apart from antibacterial activity, toxic metals also create problems in the body system. These are estimated spectrometrically with the help of a reagent , dithiozone. For example:

(1) Cu^{+2} solution reacts with dithizone in 1,1,1 trichloroethane the Cu^{+2} solution turns yellow brown.
(2) Cd^{+2} dithizone in 1,1,1 trichloroethane turns violet solution.
(3) Pb^{+2} dithizone in in 1,1,1 trichloroethane gives brick red color.
(4) Zn^{+} solution + dithizone turns pink.

So care must be taken to find the concentration in food or water Polambo and Sample (2001) suggested distinct and constant need of same and more efficient therapeutic agents. Aburjarai et al (2001) confirms folklore accounts in literatures on the use of variety of plant preparations for the treatment of infections.

A comperative study of phenolic content and antioxidant activity between Curcuma caesia and Curcuma amada from Zingiberaceae family. The biological effects of turmeric have been attributed to its chemical constituents.

Curcumin is well known for its an inflammatory, antiangiogenic, antioxidant wound healing, anticancer effects as reported by Jaiprakah et al.. Curcuma amada showed by the presence of phenolic compounds, phytosterols, terpenoids , saponius and amino acids. These have good medicinal properties. Kanand. Et al..

Experimental studies on rats and mice and on human cells, curcuma caesia and curcuma amada rhizome extract have the ability to inhibit carcinogenesis according to the Thaloor et al. (1998) in their studies in colon and proastate cancer. Rhizome extract of Curcuma amada inhibited cell – proliferation and tumor growth.

Another important plant is Coleus forskohlli. Its plant extract has important ingredient called forskolin (a diterpene) of the plant as reported by Geeta Prajapati .Here we see how antibacterial activity from medicinal plants.

Andrographis paniculata

(Medicinal Plant)

Plant Extract

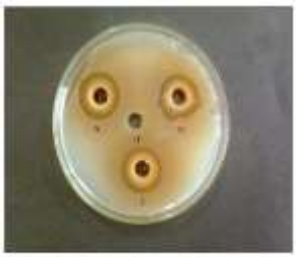
E. Colli. 015.117

Antibacterial activity of medicinal plant appear in different toxic metal (Cd+2, Zn+, Pb2+and Cu+2)

Antibacterial activity

Antifungal activity

Antiviral activity



Apart from antibacterial activity, toxic metals also create problems in the body system. These are estimated spectrometrically with the help of a reagent , dithiozone. For example:

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(4) Zn^{+} solution + dithizone turns pink.

Material and Methods:

In Andrographis paniculata, total phenolic content in mg of GAE/ gare described below, Phenolic content is estimated by Folin – Cio Calteau reagent. Reports are as under.

Table No. 1

(1) Leaf	-	75.86 ± 9.70
(2) Stem	-	35 ± 0.30
(3) Fruits	-	180 ± 1.20

Phenols acts as antioxidants. It has been observed that phenols of A. paniculata protects the body lever in rat and mice. This has been reported by Chaudhary et al. (1984) [7]. A. paniculata extract is effective against anti Escheri Coli. The antioxidant property of A. paniculata, against cardiovascular disease. As reported by Ziaco, and Fang W. (1990) in the table below. Describes activity of A. paniculata extract against Salmonella typhi.

Table No. 2

		Salmonella typhi	
		SDT	DDT
A. Paniculata extract	-	+ + +	+ + +
Cassia Occidentalis	-	+ +	+ +

Nutrient profile of antioxidant components of Costus speciosus and Costus igneous- Vishalakschi. Devi et al. (2010) Ind. Journal of natural products p.p. 116-118. These two important medicinal plants in worm infection, leprosy, asthma, anemia and work as insulin. Their have antioxidant properties as described below :

Table No. 3

Antioxidants	C.igneus	C. speciosus
(1) Ascorbic acid (mg)	81	216
(2) B.carotene (mg)	667	184
(3) L- Toccoferal (mg)	149	26
(4) Glutathione in millimoles	75	107
(5) Total phenols / 100gm extract	4.5	2.2
(6) Total flavonoids mg / g extract	0.848	1.89

A comparative study of phenol content and antioxidant activity between curcuma caesia and curcuma amada reported by M. Krishnaraj M. et al. International Journal of Plant Production (2010). The free radical scavenging property of rhizome extracts was determined by ABTS (2, z^1 – azobis -3). Ethane ben 30, thia 30, azolin -6 sulphonic acid. As

Table No. 4

Sample Conc (ppm)	Super oxide radical scavenging activity	
	C. Amada	C. curcuma
5	4.615 ± 0.76	4.615
10	7.9 ± 0.8	8.204
15	11.794	13.8
20	18.4	28.717

Conclusion: All medicinal plants described have phenolic contents and hence they have free radical scavenging property. The plants are easily available and good under diverse condition, only condition is good rainfall. Most are rhizome containing. A. paniculata can do good in this diseases. Leaves are deep green flowers are small and white in colors. Seeds are green and split in dry, seeds disperse. This may the disperse and grow. Restorative plants amalgamation many substance compounds for capacities including protection against bugs, parasites, illnesses and herbivorous warm blooded creatures. Antibacterial action additionally asess from a few restorative plants on normal intestinal food borne microorganisms.

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