Water Pennywort Its Effect against Gastrointestinal Infections

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Abstract

This study was conducted to determine the effect of water Pennywort leaf extract and the controls against gastrointestinal bacteria and was conducted to find out the best concentration to inhibit Stapylococcus aureus and Escherichia coli against the control groups.

This study was conducted at the laboratory of the Cordillera Regional Science High School, Wangal, La Trinidad, Benguet on October 15-19, 2012.

In like manner, the researchers used the Completely Randomized Design (CRD) and Duncan's Multiple Range Test (DMRT). Six (6) treatments of Water Pennywort leaf extract having ten (10) mL for each concentration were used. Treatment 1 was composed of pure 100% Water Pennywort leaf extract. Treatment 2 was combination or 75% Water Pennywort leaf extract. Treatment 2 was a combination of 75% Water Pennywort leaf extract and 25% sterile water. Treatment6 3, the 50% of pure Water Pennywort leaf extract was mixed with 50% sterile water. Treatment 4 comprised of 25% Water Pennywort leaf extract and 75% sterile water. The control groups were Treatment 5, the positive control which is the amoxicillin and Treatment 6, the negative control which is the sterile water. There were three (3) replications per treatment with three (3) replicates for each trial. Disk diffusion method was used to determine the zone of inhibition of the different treatments.

Findings showed that the different treatments have a significant effect on the growth of gram negative and gram positive gastrointestinal bacteria. Within the different concentrations, it was found out that 100% Water pennywort leaf extract was the best treatment for S. aureus while

25% Water Pennywort leaf extract is the best treatment for E. coli. Moreover, it was also determined that the best treatments of Water Pennywort leaves extract has a greater effect than that negative control which is the sterile water but is less effective than the positive control which is amoxicillin.

From the data gathered, analyzed and interpreted, the researchers recommend that future studies will use the stem and roots of Water Pennywort; that other methods of extraction be explored to determine the best way of extracting active antibacterial components of Water Pennywort; that the amount of Water Pennywort be increased; and that, similar studies be conducted to validate the above findings.

Conclusions

Based on the findings of the study, the following conclusions were drawn:

1. The different treatments of Water Pennywort leaves can inhibit the growth of gram negative and gram positive gastro intestinal bacteria.
2. The best treatment (100% Water Pennywort leaf extract) against the gram positive bacteria is more effective as compared to the negative control (sterile water) but less effective as compared to the positive control (amoxicillin).
3. The best treatment (25% Water Pennywort leaf extract) against the gram negative bacteria is more effective as compared to the negative control (sterile water) but is less effective as compared to the positive control (amoxicillin).

Recommendations

From the conclusions drawn, the following statements are recommended:

1. For future researchers, the use of the stem and roots of Water Pennywort to inhibit the growth of gram negative and positive gastrointestinal bacteria is suggested.
2. Other methods of extraction steam distillation and water extraction be explored to

determine the best way of extracting active antibacterial components of Water Pennywort.

3. The future researcher are advised to increase the amount of Water Pennywort leaf increasing its concentration.
4. Similar studies be conducted to validate the above findings.

Bibliography

A. Books

Bennet, R.W., et al. (2011). *Staphylococcal Enterotoxins* (Bacteriological Analytical Manual). United States: AOAC International.

Bennet, R.W., et al. (2001). *Staphylococcal aureus* (Bacteriological Analytical Manual). United States: AOAC International.

Duke, J.A., et al. (1985). *Hydrocotyle sibthorpioides* (In Medicinal Plants of China). Chicago: reference Publications.

Feng,P., et al. (1974). *Diarrheagenic Escherichia coli* (In Bacteriological Analytical Manual). United States: AOAC International.

Fogarty, J. E (1974). *Folk Treatment* (In A Barefoot Doctor's Manual). Bethesda, USA: John E. Forgaty International Center for Advance Study in the Health Sciences.

Manandhar,N., et.al.(2002). Ethnobotany. In Plants and People of Nepal. Oregon: Timber Press.

B. Journal

Akar, et al. (2008). MEDICINAL PLANTS Used against Dysentery, diarrhea and Choler by Tribes of erstwhile Kameng District of Arunchal Pradesh. Natural Products radiance.

Altermeier, W., et al. (1963). Staphylococcal Enterocolitis Following Antibiotic Therapy. Annals Surgery, pp. 847-58

Ananchaipattana, C., et al. (2012). Prevalence of Foodborne Pathogens in Retailed food in Thailand. National Library of Medicine PubMed.

Andarwulan, N., et al. (2010). Polypheols, Cerotenoids and Ascorbic Acid in Underutilized Medicinal Vegetables. Science Verse Direct.

Attele, A., et al. (1999). Commentary: Ginseng Pharmacology-Multiple Constituents and Multiple Actions. Biochemical Pharmacology, 1685-1693.

Banerjee, M., et al. (2011). Phenotypic and Genetic Characterization Of Bacillus Cereus Isolated From The Acute Diarrheal Patients. The Indian Journal of Medical Research

Betty, M., et al. (2006). Epidemic Diarrhea due to Enterotoxigenic Escherichia coli. Clinical Infectious Disease, pp. 329-34

Choudhury, M D., et al. (2010). Some antipyretic ethno-medicinal plants of Manipuri Community of Barak Valley, Assam, India. Ethnobotanical leaflets

Cheng, et al. (2009). Studies `on the Chemical Constituents and their Anti-timor activity in Centipede Minima Lour. & Hydrocolyte Sibthorpioides Lam. Chinese Doctoral Thesis.

Cisowska, A., et al. (2011).anthocyanin as antimicrobial agents of natural plant origin. Natural products communication, pp. 149-56.

Clarke, S. et al. (2001).). Diarrheagenic Escherichia coli—an emerging Problem? Diagnostic Microbiology and Infectious Disease, pp. 93-8.

Duke, J. A., et al. (1985). Hydrocolyte Sibthorpioides. In Medicinal Plants of China. Chicago: Reference Publication

Govind, P. et al. (2011) Medicinal Plants against Liver Diseases. International Research Journal of Pharmacy

Gravet, A., et al. (1999). Predominant staphylococcus aureus isolated from Antibiotic-Associated Diarrhea Is Clinically Relevant and Produces Entertoxin A and Bicomponent Toxin Luke-Lukd. Journal of Clinical Microbiology, Pp. 4012-4019

Hap, S., et al. (2012). Functional properties of some new Zealand Fruit Extracts towards Selected Probiotic and Pathogens Bacteria. National Library of Medicine PubMed.

Hiton, N., et al. (1960). The Significance of the Isolation of Coagulase-Positive Staphylocci from Stool. With Special References to the Diagnosis of Staphylococcal Enteritis. American Journal of Clinic Pathology, pp. 505-10

Huang, Q., et al. (2012). Protective effect of genistein isolated from Hydrocolyte Sibthorpioides on Hepatic Injury and Fibrosis Induced by Chronic Alcohol in Rats. PubMed.

Huang, S., et al. (2008). Antioxidant and antiprolifelative activities of the four Hydrocolyte Species from Taiwan. Biochemistry: Botanical Studies.

Hulup, M. E. et al. (2001). What to do when Holiday Spoiler of Traveler's Diarrhea Hits. The Jakar Post

Hurst, T A., et al. (1972). Effects of Secondary Metabolites on the Organisms Producing Them: Effect of Nisin on Streptococcus Lactis and Enterotoxin B on Staphylococcus Aureus. National Library of Medicine Pubmed.

Klein, R et al. (2004). Pathogenic and phytochemical Characteristics of Plant Species with Adaptogenic Properties. Master's Thesis Paper: Montana State University

Lee, J., et al. (2003). Selective Priming of the 1-Mediate Antigenispecific Immune Respondents Following Oral Administration of Mixed Prescriptions of Traditional Korean Medicines. Clinica Chimica Acta, pp. 133-142, 329

Lievrs, R. et al. (2001). Necrotizing Enterocolitis in A Married Couple Due O A Staphylococcal Toxin. PubMed, pp. 595-7

Lindsey, K., et al. (2003). Importance of Plants Sterol in Pattern Formation and Hormone Signaling. Trends in Plants Science, pp. 521-525.

Lou, Z., et al. (2011). Antibacterial Activity and Mechanism of Action of Chorogenic Acid. Journal of Food Science.

Lowly F. D. et al. (2003). Antimicrobial resistance: The Example of Staphylococcus Aureus. Journal of Clinical Investigation, Pp. 1265-1273. Luuisiana Department of Health and Hospitals. (2004). Bacillus Cereus Toxi- Infection. Infectious Disease Epidemiology Section.

Matsushita A, A., et al. (2004). Hydrocotylosides I-VII, New Oleanne Saponis from Hydrocolyte Sibthorpioides. Journal of Natural Products

Mu, S., et al. (2004). Study on Chemical Constituents of Volatile Oil from Hydrocotyle Sibthorpioides Lam. Natural Products Research and Development

Nataro, J. P et al. (1998). Dhiarrheagenic Escherichia coli. Clinical Microbiology Reviews. pp 142-201

Oeding, P., et al. (1954). The occurrence of Staphylococci in the Intestinal Content after Treatment with Antibiotics: A Bacteriological and Anatomical Study of Routine Autopsy Material. Acta Pthologica ET Microbiologica Scandinavica. Pp 473-83

Qi, N., et al. (2008). Anti-Bacterial Activity of Myricetin in Vitro. West China Journal of Pharmaceutical Science

Rigano, D., et al. (2006). Anti-Bacterial Activity of Flavonoids and Phenylpropanoids from Marrubium Glob sum ssp. Libanoticum. Phototherapy Research

Ruso, T., et al. (2003). Medical and economic impact of extra intestinal infections due to Escherichia coli.

Shafe, R., et al. (2012). Anti-Bacterial and Anti Oxidant Activities of Two New Kaempferol Glycosides Isolated From Solenostemma Argel Stem Extract. Asian Journal of Pant And Sciences,

Shittu, A., et al. (2011). Antibiotic Resistance and Molecular Epidemiology of Staphylococcus Aureus In Nigeria, Biomed Central; Microbiology

Stulberg, Micheal, et al. (2004). The Microbial Biorelam: A Microbial Diversity Resource. Kenyon College.

Takeochu, K., et al. (2001). Clinical Studies of Enteritis Caused By Methicillin Resistance Staphylococcus Aureus. European Journal of Surgery, pp. 293-6

Thakkar S., et al. (2010). A case of staphylococcus aureus enterocolitis. Gastroenterology and hepatology.

Wild, C., & Fasel, J (1969). Effect of Flavonoid on the Capillary Resistance of the Rectal Mucosa in Hepatic Cirrhosis. American Journal of Protocology. pp 60-62

Yu, F., (2007). Effects of Hydrocolyte Sibthorpioides Extract on Transplanted Tumors and Immune Function in Mice. National Library of Medicine PubMed.

Zhang, L. (n.d.) Study on the Antiheptic Chemical Constituents of Hydrocolyte Sibthorpioides L. Globe Thesis.

C. Periodicals

Benaning, M. (2011, June 15). Bacteria outbreak raises safety concern. Manila bulletin

Manandhar, N., (2002) Ethno botany. In plants and people of Nepal. Oregon: Timber Pres.

D. Websites

http//www.arsu.edu. Chamberlain, N. (2008). Gastrointestinal tract infections. Accessed: October 16, 2012

http//www.illiooiswildflower.info.hilty, J (2002-2012). Weedy wildflowers accessed: august 25,2012

http//www. Ivytech.edu. ivytech community college. (2004). Infection of the gastrointestinal; tract. Accessed: October 16, 2012

http//www.stuartsxchange. Com. Stuartxchange. (2012) January Accessed: October 16, 2012

http//www.textbookofbacteriology.net. todar,k(2008), Accessed august 15, 2012

http//www.uib.es. UIb-Microbology Dep't. (2006, October 03). "Infection gastrointestinal". Accessed: October 16, 2012.