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A Study of Antibacterial Effect of Medical Herbs, Probiotic and Antibiotics against Acne Causing Bacteria

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ABSTARCT
Acne Vulgaris, a commonly occurring chronic inflammatory skin disorder is known to cause both physical scarring and clinical depression owing to emotional trauma at any stage that occurs. Commonly antibiotics are used to treat the ailment which alternatively is also treated with probiotics and natural herbs. The present study aimed at making a comparative study to understand the antibacterial activities of antibiotics, probiotics, neem and aleovera against Propionibacterium acne and Staphylococcus epidermidis. Both bacteria were isolated from site of acne on the skin of subject chosen for study. The efficacy in term of the antibacterial activity was observed in term of zone of inhibition forms against the bacteria isolated. Neem showed maximum zone of inhibition as compared to the antibiotics, probiotics, and alo vera chosen to compare with.

Introduction

Acne vulgaris is one of the most commonly observed skin diseases, affecting young adults (11-30years), It can cause permanent physical scarring resulting in intense emotional scars, which might lead to clinical depression and social phobias[4,5]. Normally, antibiotics are used as acne treatment to kill the bacteria. Among them, erythromycin, lincomycin and tetracycline are usually chosen for the antibiotic therapy [6,7]. To overcome the problems of side effects, several candidate substrates, such as traditional Chinese

medicines, essential oils, herbs, and chitosan, have been investigated for the treatment of acne[8,9].

Modern acne therapy has been designed to interrupt the pathogenic pathway at one or more points. Topical or systemic therapy is available for the treatment of acne, which includes comedolytic agents and antibiotics and various anti-inflammatory drugs and systemic therapy includes antibiotics, zinc and hormones. The excessive use of antibiotics for long periods has lead to increased resistance in acne causing bacteria i.e *P.acne and S.epidermidis* against a number of antibiotics used to treat acne.[10]

To overcome this problem of antibiotics resistance, essentials oils and medicinal plant extracts have been extensively studied as an alternative. Herbs are safe, have increased efficacy and multifunctional. The ingredients in topical acne treatments, particularly herbs and naturally derived compounds have received considerable interest as they have fewer adverse effects than synthetic agents[11]

Material and Methodology

Our research work was conducted at College of Applied Education And Health Science, Meerut. The test organism used in study was *Propionibacterium acne* and *Staphylococcus epidermidis*. Both bacteria were isolated from acne. About 50 samples were collected from students age between 18-21 years. The samples were collected using sterile swabs and then were inoculated into Brain Heart Infusion broth. The broth was incubated for 4 days in Anacro Gas Pak. After incubation, the culture was then streaked onto BHI and Clostridia agar and incubated for 4 days at 37^{o} C. The isolated colonies were sub cultured anaerobically into BHI broth and were preserved on BHI agar slants and also inoculated by stab culture[12.]

Biochemical Characterization: The Biochemical characteristics of the strains of Bacteria isolated from the persons suffering with acnes were analyzed by looking for production of indole, sugar fermentation tests, nitrate reduction and Gelatin hydrolysis[13].

Measurement of Zone of Inhibition: The zone of inhibition for each sample was observed, measured and expressed in mm.

Result

Table no 1: Zone of Inhibition of Neem, Aloe Vera, Probiotics and Antibiotics against *Propionibacterium* acne (Number of sample = 50)

Sr. no	Name of Sample	*Propionibacterium* acne
		Mean of zone of inhibition
1.	Neem	16.00
2.	Aleo Vera	13.15
3.	Probiotics	14.15
4.	Antibiotics	15.70

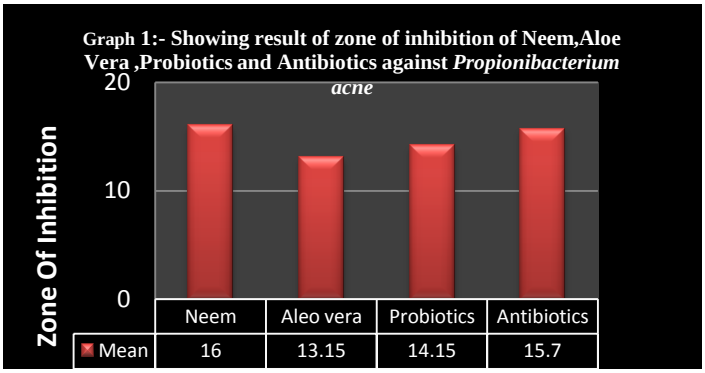
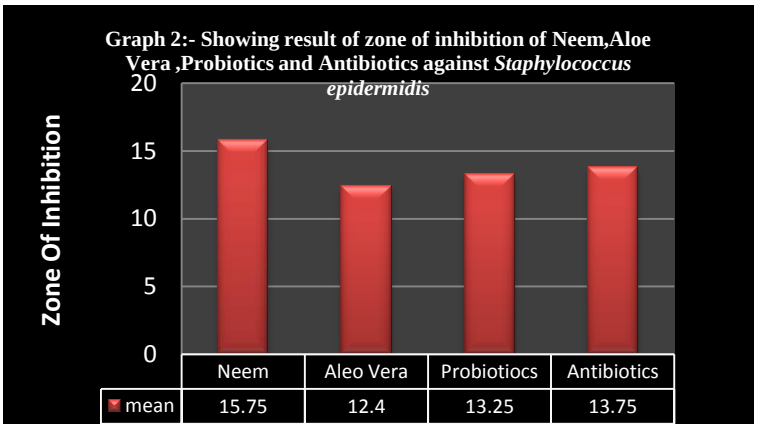


Table no 2: Zone Of Inhibition of Neem, Aloe Vera, Probiotics and Antibiotics against *Staphylococcus epidermidis* (Number of sample = 50)

Sr. no	Name of Sample	*Staphylococcus epidermidis*
		Mean of zone of inhibition
1.	Neem	15.75
2.	Aleo Vera	12.40
3.	Probiotics	13.25
4.	Antibiotic	13.75



Discussion

The present research work deals with evaluation of Antibacterial activity against acne causing bacteria. Probiotics, Antibiotics, Neem and Aloe Vera were used. Zone of inhibition was calculated and result were noted. It was found that Neem showed maximum antibacterial activity while Aleo Vera showed minimum antibacterial activity against bacteria *Propionibacterium acne* and *Staphylococcus epidermidis.* The scope of herbs increasing the antibacterial properties for antibiotics and probiotics is yet to be tested and analysed. However it is seen that Neem certainly is actively inhibiting the growth of bacteria causing acne.

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References

1. Charakida, A.; Seaton, E.D.; Charakida, M.; Mouser, P.; Avgerinos, A.; Chu, A.C. Phototherapy in the treatment of acne vulgaris. Am. J. Clin. DErmatol. 2004,5,211-216. [CrossRef] [PubMed].
2. Dai, T.; Hyang, Y.Y.; Hamblin, M.R. Photodynamic therapy for localized infections—State of the art Photodiagn. Photodyn. Ther. 2009,6,170-188.[CrossRef] [PubMed].
3. Gollnick, H.; Cunliffe, W.; Berson, D.; Dreno, B,; Finlay, A,; Leyden, J.J,; Shalita, A.R Thiboutot, D.Management of acne; A report from a global alliance to improve outcomes in acne. J.Am. Acad. Dermatol.2003,49,1-37.[CrossRef] [PubMed].
4. Han, S.M.; Lee, K.G.; Yeo, J.H.; Beak, H.J.; Park, K. Antibacterial and anti-inflammatory effects of honeybee (Apis mellifera) venom against acne- inducing bacteria. J. Med. Plants Res. 2010,4,459-464.
5. Singh, d.; hatwar, b.; nayak, s.herbal plants and propionibacterium acnes: an overview. Int. j. biomed. Res.2011, 2, 486-498. [crossRef]
6. Zu, y.; yu, h.; liang, l.; fu, y.; efferth, t.; liu, x.; wu, n. activities of ten essential oils towards propionibacterium acnes and PC-3, A_549 and MCF-7 cancer cells. Molecules *2010, 15, 3200-3210. [crossref] [pubmed]
7. FJG Ebling, "Acne Vulgaris", Text book of dermatology (6th edi..1998,3)552-554.
8. G.Amrita, N . Greeshma, M. Deepa and E.H Poornima, A review on anti-acne potential of medicinal plant extracts against propionibacterium acnes, International Journal Pharm and Bio Sciences ;3(3), 2012, 989.
9. Roselin Polugari , Shailaja Raj Marla , Shailaja. D , Isolation and Molecular Characterization of acne causing Propionibactrium acnes , ISSN 2250-3153.
10. Laboratory Exercises in Microbiology. Harley Prescott. Me Graw Hill 2002. Pg 133-193.
11. M. Munazir, R. Qureshi, M. Arshad and M. Gulfaz. Antibacterial activity of root and fruit extracts of *leptadenia pyrotec-hnica* (asclepiadaceae) from Pakistan, *Pakistan journal of botany*,44(4), 2012, 1210.