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EFFECT OF AUTO URINE (PATIENT'S SELF URINE) ON ACNE CAUSING BACTERIA "PROPIONIBACTERIUM ACNES".

ABSTRACT

Acne is a common disorder of Pilosebaceous follicle which mainly affects the teenager's upto 95 % boys and 83 % girls due to hormonal changes. In the present study Auto urine (patient's self urine) was tested for their antibacterial activity. 100 % Auto urine exhibited the best antibacterial activity toward *Propionibacterium acnes* with inhibition zone of 19.66 ± 0.578 mm in radius. 50 % concentration of Auto urine also effective against *Propionibacterium acnes* with inhibition zone 14.37 ± 0.351 mm in radius and 25 % concentration also exhibit anti-bacterial activity toward *Propionibacterium acnes* with inhibition radius 10.03 ± 0.252 in nutrient agar media. While in blood agar media, 100 % Auto urine exhibited best antibacterial activity with the inhibition zone 20.16 ± 0.352 mm in radius, 50 % concentration exhibited inhibition zone of size 16.3 ± 0.458 mm in radius and 25 % concentration exhibited inhibition zone of size 10.93 ± 0.404 mm in radius

Authors & Affiliation:

**M. Malhotra, M. M. Prakash
and Jyoti Patel**

Department of Zoology
Govt. Holkar Science College,
Indore - 4520017
Madhya Pradesh, India

Correspondence To:
M. M. Prakash

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INTRODUCTION

Acne is the most common and dreadful skin disease. Acne affects mostly skin of the face, the upper part of the chest, and the back (Harper, 2009). It occurs most commonly during adolescence, and often continues into adulthood. (Anderson and Laurence, 2006 and James et al. 2005).

Acne occurring in all races and affecting 95% of 16 years old boys, 83% of 16 years old girls. The incidence of severity of acne peak at 40% in 14-17 year old girls and 35% in boys aged 16-19.(Chaudhary, 2010, Leyden 1965 and Zu et al. 2010) It is an inflammatory chronic disease, and its clinical presentation ranges from mild comedonal form to sever cystic acne on face, chest and back. Factor which contributes to the development of acne includes hormonal imbalance and bacterial infection. *Propionibacterium acnes* bacteria mainly responsible for acne. *Propionibacterium acnes* are a Gram +ve, aero tolerant anaerobic rod shape bacteria. It is primarily recognized for its role in acne vulgaris where it is thought to contribute to the inflammatory phase of the condition (Leyden, 2001) Acne also affect the human psychology and social behavior (Bashir et al. 2010, Golchai et al. 2010 Gokdemir et al. 2010 and Misery 2011)

For many years antibiotics were usually applied to treat acne. However, these drugs are often accompanied by severe side effects and drug resistances. Therefore a treatment without any side effect has been needed. In this context urine therapy have been investigated for the treatment of acne.

MATERIAL AND METHODS

I. Collection of Acne and Urine sample

The acne sample was collected from a friend's skin in one ml distilled water. The first morning urine was collected from the same patient.

II. Urine examination

Urine was analyzed on different parameters, i.e., physical, chemical and microbial parameters to examine its normal behavior (Dissanayake et al. 2004 Konapur, 2002 and Rao, 1998)

III. Preparation of urine dilution

Three different category of Urine i. e .

- (a) 100% Urine
- (b) 50% Urine i.e. 50% Urine + 50% Distilled Water
- (c) 25% Urine i. e. 25% Urine + 75% Distilled Water

IV Media Used

Normal Nutrient agar media and a specified Blood agar media were used for testing susceptibility of *Propionibacterium acnes* bacteria toward urine.

(V) Method used

The susceptibility of *Propionibacterium acnes* bacteria against urine therapy were tested by Disk diffusion method (Wu, 2000) in Blood agar and Nutrient agar media separately. The pathogenic organism *Propionibacterium acnes* are grown in Blood agar and Nutrient agar separately in the presence of various antimicrobial impregnated filter paper disks. The presence or absence of growth around the disk is an indirect measure of the ability of that compound to inhibit the organism *Propionibacterium acnes*.

RESULT AND DISCUSSION

Lipid profile of acne sample along with their percentage contribution shown in table 1 and figure 1. Result showed highest value of Triglyceride and lowest value of very low density lipoprotein. The order of different member of Lipid Profile was as :-

Triglyceride > Cholesterol > ChoHDL > LDL > HDL > VLDL.

Physical, chemical and microbial parameters of auto urine are shown in table 2,3,4. The obtained data indicate that Auto urine is acidic in nature, pale yellow in colour and clear in appearance without any deposits and its specific gravity calculated as 1018. While albumin, sugar, ketone bodies, bile salt, bile pigment, urobilinogen, RBC, epithelial cells, erythrocytes, urates, phosphates, spermatozoa, crystals and casts were found absent in Auto urine.

Antibacterial activity of Auto urine (patient's urine) on *Propionibacterium acnes* in Nutrient agar media. (Table 5, Fig. 2)

In Nutrient agar media, zone of inhibition under different concentration of Auto urine showed following results:-

- a) 100 % Urine-100 % or pure urine found most effective against *Propionibacterium acnes* bacteria. It gave maximum inhibitory zone. The mean size of zone of inhibition was 19.66 ± 0.578 mm.
- b) 50 % Urine-50 % concentration of Auto urine was also observed effective against *Propionibacterium acne*, it also exhibit inhibition zone, and the mean size of zone of inhibition was 14.37 ± 0.351 mm.
- c) 25% Urine- 25 % concentration was also shown effective against *Propionibacterium acnes*, the mean size of zone of inhibition was 10.03 ± 0.252 mm.

- **Antibacterial activity of Auto urine (patient's urine) on *Propionibacterium acnes* in Blood agar media. (Table 6, Fig. 3)**

In Blood agar media, Zone of inhibition under different concentration of Auto urine presented following results:-

- a) 100 % Urine - 100 % or pure urine was found most effective against *Propionibacterium acne*. The mean size of zone of inhibition was measured 20.16 ± 0.352 mm.
- b) 50 % Urine -50 % concentration of Auto urine was also effective against *Propionibacterium acnes*, the mean size of zone of inhibition was 16.3 ± 0.458 mm.
- c) 25 % Urine - 25 % concentration was also shown effective against *Propionibacterium acnes*, the mean size of zone of inhibition was 10.93 ± 0.404 mm.

Use of Urine for the treatment of various diseases is known as Urine therapy (Natural Standard Monograph, 2011). Urine effectiveness was tested with measurement of inhibition zone. The Inhibition zone was lower (14.69 mm) in Nutrient agar media and maximum (15.80 mm) in Blood agar media. The inhibition zone was larger against 100% Urine in both the media. Its dilution factor reduces the size of inhibition zone or we can say its effectiveness. Urine from normal individuals was often inhibitory and sometimes bactericidal for growth of *Propionibacterium acnes* and other organism (Kaye, 1968). For the study of *Propionibacterium acnes* bacteria, the Blood agar medium is more suitable and effective for the growth of the same bacteria (Hoeffler, 1977 and Dworkin and falkow, 2006.) Overall results revealed that, 100% concentration of Auto urine possess the maximum antibacterial activity toward *Propionibacterium acnes*. Hence actual application of patient own first urine may be useful in the treatment of acne provided patient urine's physico chemical properties are not adverse.

Lipid Profile of acne sample -			
S.No.	INVESTIGATION	RESULT	% CONTRIBUTION
1	Triglyceride	3.72	28.66
2	Cholesterol	2.90	22.34
3	HDL	1.30	10.02
4	LDL	2.12	16.33
5	VLDL	0.74	5.7
6	Cho. HDL	2.20	16.95

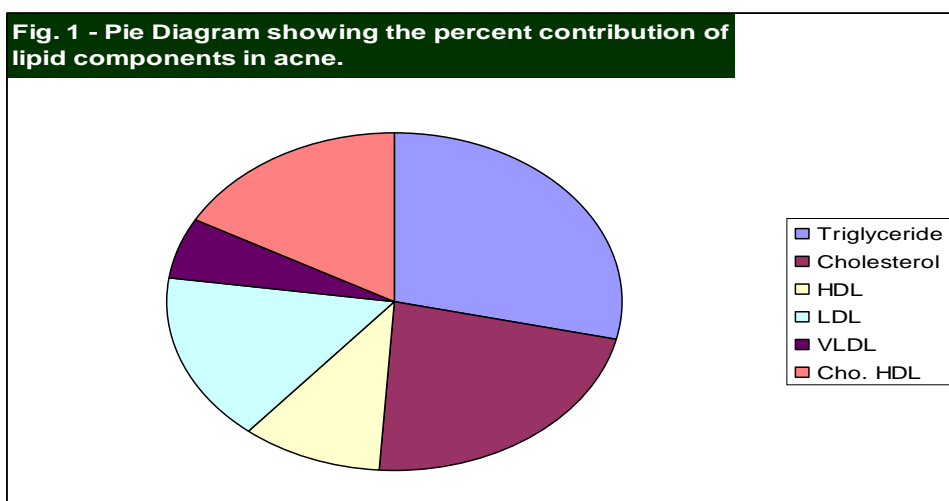


Table No.2: Physical examination of Auto Urine

S.No.	INVESTIGATION	RESULT
1.	Volume	5.0
2.	Colour	Pale Yellow
3.	Transparency	Clear
4.	Deposit	Nil
5.	Specific Gravity	Value 1018

Table No.3: Chemical examination of Auto Urine

S. No.	INVESTIGATION	RESULT
1.	Reaction (pH)	Acidic
2.	Albumin (Qualitative)	Nil
3.	Sugar (Reducing Substances)	Nil
4.	Ketone Bodies	Absent
5.	Bile Salt	Absent
6.	Bile Pigment	Absent
7.	Urobilinogen	Absent

Table No.4: Microscopic examination of Auto Urine

S. No.	INVESTIGATION	RESULT
1.	Pus Cells	O-IIHPF
2.	RBC	Nil
3.	Epithelial Cells	Nil
4.	Erythrocytes	Nil
5.	Urates	Nil
6.	Phosphates	Nil
7.	Spermatozoa	Nil
8.	Crystals	Nil
9.	Casts	Nil

Table No .5: Antibacterial activity of Auto Urine (Patient's urine) on *Propionibacterium acnes* in Nutrient agar media.

Urine concentration(in %)	Zone of Inhibition (Radius) in mm ± S.D.	Standard error
100	19.66 ± 0.578	0.334
50	14.37 ± 0.351	0.203
25	10.03 ± 0.252	0.146

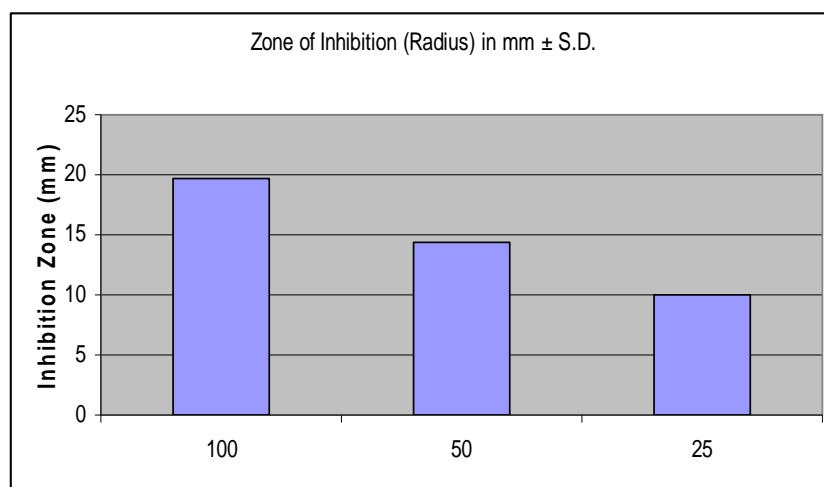
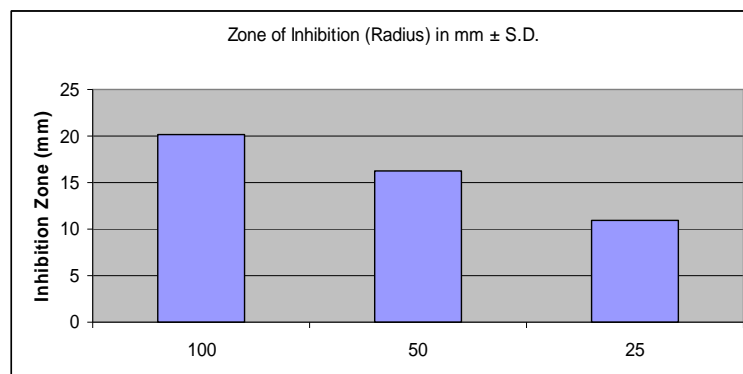


Fig. No. 2: Graphical representation of antibacterial activity of Auto Urine (Patient's urine) on *Propionibacterium acnes* in Nutrient agar media.

Table No. 6: Antibacterial activity of Auto Urine (Patient's urine) on *Propionibacterium acnes* in Blood agar media.

Urine Concentration (in %)	Zone of Inhibition (Radius) in mm ± S.D.	Standard error
100	20.16 ± 0.352	0.204
50	16.3 ± 0.458	0.265
25	10.93 ± 0.404	0.234

Fig. No. 3: Graphical representation of antibacterial activity of Auto Urine (Patient's urine) on *Propionibacterium acnes* in Blood agar media.



REFERENCES

1. Anderson and Laurence 2006: Looking Good, the Australian guide to skin care. Cosmetic medicine and cosmetic surgery. Medical Journal of Australia.
2. Bashir, K.; Dar, N.R. and Ullah Rao, S. 2010: Depression in adult dermatology Outpatients. Journal of the College of Physicians and Surgeons. 811- 813.
3. Chaudhary, S. 2010: Anti Acne Activity of Some Indian Herbal Drugs. International Journal of Pharma Professional's Research.
4. Dissanayake, V.H.; Morgan, L.J. ; Broughton Pipkin, F.; Vathanan, V.; Premaratne, S.; Jayasekara, R.W. and Seneviratne, H.R, 2004: The urine protein heat coagulation test a useful screening test for proteinuria in pregnancy in developing countries: a method validation study. British Journal of Obstetrics and Gynecology. 491-494.
5. Dworkin, M. and Falkow, S. 2006: The Prokaryotes: A Handbook on the Biology of Bacteria, Vol. 7.
6. Golchai, J.; khani, S.H.; Heid8fzadeh, Eshkevari, S.S.; Alizade, N.; and Eftekhari, H. 2010: Comparison of anxiety and depression in patients with acne vulgaris and healthy individuals. ~Indian Journal Dermatology. 352-354
7. Gokdemir, G.; Fisek, N.; Koslu, A.; Kutlubay, Z. 2010: Beliefs, perceptions and Sociological impact of patients with acne vulgaris in the Turkish population. Indian Journal Dermatology. 504-507.
8. Harper, J.C. 2009: Should dermatologists prescribe hormonal contraceptives for Acne? Dermatologic Therapy Journal. 452-457.
9. Hoeffler, U.1977: Enzymatic and Hemolytic Properties of Propionibacterium acnes and Related Bacteria. Journal of Clinical Microbiology, USA. 555-558.
10. James, W.D.; Berger, T.G; Elston, D. and Andrews, E. 2005: Diseases of the Skin. Journal of Clinical Dermatology, Tenth Edition Philadelphia, USA.
11. Kaye, D.1968: Antibacterial activity of human urine. Journal of Urologic Clinics. North America.2374-2390.
12. Konapur, P.G. 2002: Urine Analysis. [http://www.scribd.com/doc/45789263/Urine Presentation](http://www.scribd.com/doc/45789263/Urine%20Presentation).
13. Leyden, J.J. 2001: The evolving role of Propionibacterium acnes in acne. Journal of Cutaneous Medical Surgery, (Germany).139-143.
14. Leyden, J. 1995: Induction of proinflammatory cytokines by a soluble factor of Propionibacterium acnes. Implication for chronic inflammatory acne. European Journal of Immunology, (UK). 3158-3165.
15. Misery, L. 2011: Consequences of Psychological Distress in Adolescents with Acne. Journal of Investigative Dermatology, UK. 290-292.
16. Rao, S.B. 1998: Practical Biochemistry for Medical Students. Academic Publishers, Bangalore.
17. Natural Standard Monograph, 2011: Natural medical journal 2011.
18. Tambekar, D.H. and Dahikar, S.D. 2010: Antibacterial activity of some Indian Ayurvedic preparations against enteric bacterial pathogens. Journal of Advanced Pharmaceutical Technology and Research.24-29.
19. Wu, C.C. 2000: Antimicrobial susceptibility of Mycoplasma hyorhinis. Indian Journal Of Veterinary Microbiology. 25-30.
20. Zu, Y.; Yu, H.; Lu, L.; Fu, Y.; Efferth, T.; Liu, X. and Wu, L. 2010: Activities of Ten Essential Oils towards Propionibacterium acnes and PC-3, A-549 and MCF-7 Cancer Cells. www.mdpi.com/journal/molecules.