

Environment & Social Welfare Bulletin **(ESW Bulletin)**

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(Dedicated to Environmental Sciences & BioTechnology)

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Message by Collector & District Magistrate, Chhatarpur MP

I am extremely happy to know that Environment and Social Welfare Society, Khajuraho, India, and Godavari Academy of Science & Technology, Chhatarpur, Madhya Pradesh, India jointly going to publish online and printed Environment and Social Welfare Bulletin with the aim to encourage Student, Researcher, and Writer for contribution of scanty knowledge in the various field of Environment and Human Welfare.

I congratulate and extend my best wishes to the Editor-in-Chief and Editorial Board members who have great contribution to make this magazine a ground success.

Dr. Masood Akhtar, Collector & District Magistrate

Message by Chief Conservator of Forest, Circle Chhatarpur MP

E-mail: cfchtpur@mp.gov.in, cfchhatarpur@mpforest.org Phone - 07682-242107 (O.), 242870 (R.), 242107



It is a matter of immense pleasure that Environment and Social Welfare Society, Khajuraho, India, in association with Godavari Academy of Science & Technology, Chhatarpur, India is going to publish online and printed **Environment and Social Welfare Bulletin** (ESW Bulletin) for Environment and other essential aspect for Human Welfare.

ESW Bulletin is a platform by which young minds express their achievements, their aspiration and can share valuable suggestion to create awareness among masses towards biodiversity conservation, eco-restoration and Environmental degradation.

I wish all success to the Editorial Board Members and Contributors of this ESW Bulletin and hope the value ethics and wisdom of these amazing people would help in taking some positive steps towards improving our environment and protect our planet for future generation.

S.K.Mandal, Chief Conservator of Forest

Key Note Address by Dr. Shubhrata Mishra, Editor-in-Chief

Environment as we find it today around us is developed by a complex and long natural process and social system are the basis of sustainable development and social welfare. In the present time environmental condition of the earth is uncertain due to unwise anthropologic activities carried out since age for their own interest therefore, the planet is passing through changes in the environment. Environmentalist and scientist of the world are aware about this situation and they are trying to overcome and protect the environment at National and International level.

About Environment & Social Welfare Bulletin (ESW Bulletin) Environment and Social Welfare Society, started ESW Bulletin with the aim to encourage Student, Researcher, and Writer for contribution of scanty knowledge in the field of Education, Life Sciences, Sciences, Research, Environmental Sciences, Natural Resources Conservation and Sustainable Development, and in the field of Literature. We serve Environment and Human welfare at the highest levels of Ethical Conduct.

Aim and Scope

Environment and Social Welfare Bulletin, India is an open access peer-reviewed online Bulletin published half yearly. The primary objective is to become the premier source of high quality article from the entire world. ESW Bulletin provide a platform to all scientists, researchers, academicians, industrialists, readers and writers to share their ideas, knowledge, information and findings among the people of their own fraternity. The major emphasis will be on publishing quality articles rapidly and making them freely available to writers worldwide. The result of work will be published in The ESW Bulletin in which the central theme is the mechanism by which factors affects Environment and Society as well as living organism.

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should be Fellow of the Environment and Social Welfare Society, India. Guest Editors shall be responsible for ensuring quality and proper referring of the manuscript.

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Science Achievements, Forest Conservation, Water Conservation, Child Health Care, Human Health and Medicine, Save Planate, Donate Blood Save Life, Biodiversity, Environmental Impact Assessment, Oceanography, and Drug De-addiction. (*For January to July Issue*).

Animal Welfare, Society and Human Welfare, Global Health, Wildlife Conservation, Food Security, Children's Celebration, AIDS, Pollution Control and its legislation, Human Right, and Biodiversity. (*For July to December Issue*).

However, the above titles are not exhaustive and article in other niche areas are also considered if the article useful for Environment, Education, and Science & Technology advancement in the nation.

Instruction for Authors

The manuscript should be original types in MS Word A4 size paper (in English Times New Roman font size-12 and in Hindi Kurtidev 010 font size-14) should be submitted electronically as attachment at Email ID: eswsociety320@gmail.com or editor@godavariacademy.com or send by registered/speed post to Editor-In-Chief, Environment and Social Welfare Bulletin, at Regional office, Godavaripuram, Bajrangnagar, Panna Road, Chhatarpur 471001.

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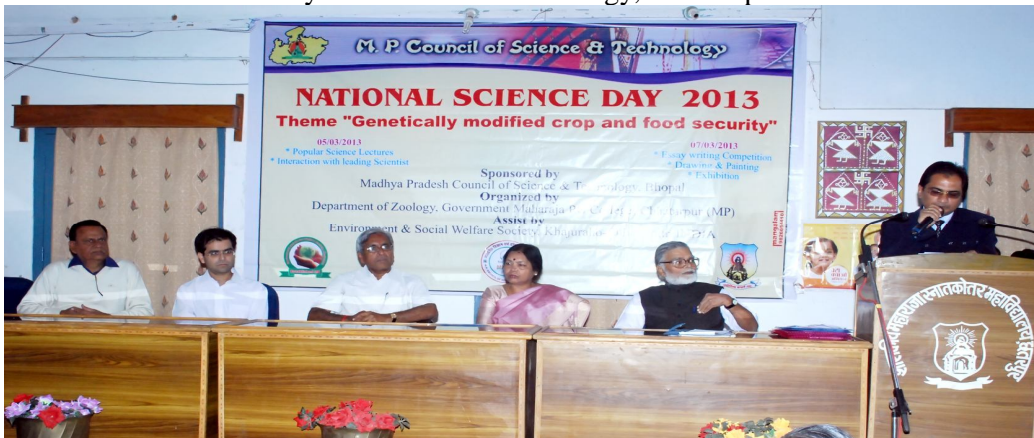
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Event Report of Environment and Social Welfare Society, Khajuraho-471606., and Godavari Academy of Science & Technology, Chhatarpur 471001. India.



Dr. Pramod Mishra, Dr. Shaketa A. Saxena (MD) Canada, Dr. A.P. Saxena, Dr. Snehlata Khare, Dr. Bhartendu Prakash, Dr. Ashwani Kumar Dubey on Mic.



Environment and Social Welfare Society Members Welcome to Sr. Katthak Artist Uma Dogra, Bombay During Khajuraho Dance of Festival



Workshop Participants of Spiritual Application and Rajyog in Godavari Academy, Chhatarpur

Invitee Treatise (Section in Hindi)

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exufl g vokL; k

egjktk N=I ky cñny[k.M fo'ofokly;] Nrjij ½e-iz½

Email: mcbuchhatarpur@yahoo.com

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iŧk dh tkrh gŧ

efgykvkads 'kkjhřjd : i l siq "kka l s detkj ekuk x; k gŧ ; g ikřfrd dkj.k gŧ bl ea iŧŧk
dkj.k ; g gŧfd efgyk; a cPpka dks tle nřh gŧ mudk ykyu ikyu dŧrh gŧ cPps ds tle l s
djhc nks ekg iŧZ , oa tle ds ckn djhc , d o"ŧZ rd efgyk vius iŧ ; k iŧh dh nŧŧHkkky , d
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iRuh dh nŧŧHkkky dŧrk gŧ ; g ckr u dŧy euŧ; ka eacŧYd l Hkh thoka eak; h tkrh gŧ bl dk
iŧřrd vk/kkj gŧD; křd iŧk gkusokyk f'k'kq ifr&iRuh nksuka dsl; kj dh l křkr gkrk gŧ bl hřy; s
__f'kefu; ka us ; g /kkj.kk m) r dh gŧ L=h dh ^ckY; kolFkk voLFkk eafirk j{kk dŧrk gŧ ; kŧu ea
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dkykrj ea bl ds vřZ cnyrs x; s , oa iq "k us L=h dks viuh l ŧo/kk ds vuŧ kj rFkk dky
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Qŧyrk x; ka l cy fucŧy dks vius o'k eaj[krk Fkka ftl dh ykBh ml dh Hkŧ okyh dgkor
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ikphu dky eaefgykvkadh n'kk vR; Ur n; uh; Fkh] , d k vud xŧkka eaf. kř gŧ fdUŧq bl si wkr-%
l gh ugh ekuk tk l drka L=h dh n'kk dsckjseatsvc rd crk; k ; g ikphu xŧkka eakřkf.kd
dFkkvka , oabfŧgl ds iUuka dk vŧk gŧ L=h dh nŧŧy n'kk] Hkŧ; k , oa iŧ k/ku dk l k/ku ekuus
okyk dŧ oxZ gh Fkh] tŧ s dchys dk iŧŧk jktk ; k tkxhjnkh] vkyk vkŧh j vkŧnA ; gh og oxZ

Fkk] ftl us viuh foykfl rk ds l k/kuka ea L=h dks Hkh 'kkfey fd; k Fkk] fdUrq bl l s uhyk okyk oxl vFkkZr fdl ku] e/; e ukdjh i\$kk] etnj vkfn ftluga ge e/; e oxl , oafuEu oxldg l drs g\$ ftlUgkus ml ; x es Hkh fL=; ka dks l Eeku fn; k] ftl dh ifjf.kfr ; g g\$ fd vkt efgykva dks cjkckjh dk ntiz nns ds fy; s vud dkumu] ; kstuk; } l x Bu vkfn dk fuekZk gq/kA eryc] mPp oxl ij e/; e , oafuEu oxl dk f'kdak d l rk x; kA

bu l c ckrka ds vykok gea fL=; ka ds cfynku cgnjh , oajhRo l okHko vkfn xqkka dks Hkh Lej . k djuk pkfg; A t\$ s ukjh dks fo/krk dh vuq e , oalokd"B jpuk ekuh tkrh g\$ ml ea d: .kk] eer] Lug] l fg".kqk vkfn xqk LokHkkfod : i l s fo/keu jgrs g\$ uj v\$ ukjh xkMh ds nks ifg; s g\$ tks , d n\$ js ds cx\$ v/kj s g\$ dgk tkrh g\$ fd iq "k dh l Qyrk ds ihNs ukjh dk gkFk gkrk g\$ t\$ s jRukoyh ds frjLdkj ds ckn ryl hnk l dks geus tkuka dkyhnl dks fo/krk dh mi\$kk us gh] dfo] d\$yxq ds x\$oe; in dks ikr dj; kA e\$ydky , oal Yrur dky ea vud fL=; ka us 'kkl u dh ckxMk\$ l EgkyA vdcj dh e\$; vk; k ek; vu=k us yxHkx 5 o"l rd 'kkl u ij fu; a. k j [kka jkuh n\$krh] ujt g\$ ejk Bk 'kkl d jktjke dh fo/kok rkjckb] nsh vfgY; kckb] vkfn , d s vud mnkj . k g\$ ftlUgkus vius iz kkl fud c\$) rFkk pfj= cy l s Hkh "k. k l dV l s jk"V dh j\$kk dhA

; fn ge Hkjr; bfrgl ij n"V Mkys rks ges Hkjr; ukjh ds ifjorZ'khy l keftd , oal kldfrd ifjn"; ij vud mRFku , oairu utj vk; x\$ foxr dky eaftl ukjh us vius c\$) food , oadyk d\$ky l s pkj nhokjh dks r\$Mk- g\$ mlga dkykrj ea gekjs lkt us Lohdkj djrs g\$ s uke v\$ ifl f) ndj vlrr% budk ; 'k\$ku fd; k g\$ bue\$ xkxh] rkj] vfgY; k ckb] thtckb] pkn cho] y{ehckb] l jstuh uk; Mj l p\$rk diykuj b\$njx xk\$kh] fdj . k c\$nh ckp\$nh iky] ih-Vh- m"kk] vkfn vud uke gekjs l keus g\$ bl ea vrfj{k ea jgus okyh efgyk; a Hkh g\$ vkt efgykva dks mPp ntiz ikr g\$ ik; % ge l Hkh tkurs g\$ blga ; g ntiz egki q "kks ds l keftd mRFku ds fopkjka l s feykA bl ds fy; segki q "kka us fL=; ka dh n'kk ds ckjs ea x\$khjrk l s l kpk , oal e\$ku fd; k rFkk lkt dks tkx: d fd; kA ukjh irkfm , oal "k\$kr jgh g\$ dbZ d\$Fkkva dk f'kdj jgh g\$ ukjh dh , d h n'kk ij egki q "kka dk /; ku x; k v\$ fpjdj l spyh vk jgh ukjh tkr dh dk\$yrk] 'kfdR v\$ l guf'kyrk ds vkn'kz dks i\$% ikr djus ds fy; s l eL; kvka dk l ek/kku [kstk tkus yxkA bl i\$ztkxj . k dky eajktjke ekgu jk;] n; kum l jLorh vkfn us ukjh dh n'kk ea l \$kj ds fy; s vud 0; kid iz kl fd; A inkz iFkk] l rh iFkk] t\$ij iFkk] cg\$ookg iFkk] ckyookg iFkk] fo/kok fookg iFkk] vkfn vud , d h d\$Fkk ipfyr Fk tks fd ukjh mRFku ea ck/kd FkA , d h d\$Fkkva ds ckjs ea u d\$y egki q "kka us cfYd 'kkl u us Hkh fopkj djuk i\$khk fd; k , oal d yech cgl vkjHk gks x; h] efgykva ds mRFku , oal 'kfdRdj . k dhA

Hkjr ea Lor\$rk i\$lr ds ckn efgykva ds vf/kdkjka ds fo"k; ea fopkj vf/kfu; eka ds : i ea l keus vk; A ; s vf/kfu; e ml u; ukRed] fodkl kRed] l j {kkRed} , oafu"kskkRed Hko ds : i ea l fjr gq A Hkjr; l io/kku ds vuqNn 14 ds e\$tkcd n\$ ea l Hkh /keZ ds ukxfjdka dks l eku vf/kdkj ikr g\$ vuqNn 15 ds vuq kj fyak ds vk/kkj ij fdl h Hkh ukxfjd l s Hk\$Hko ugha fd; k tk l drkA vuqNn 15 1/3\$ ea jkT; ka dks fyak ds vk/kkj ij Hk\$Hko dh NW nh g\$ yfdu ; g Hk\$Hko efgykva ds fgr ea fo'k\$ dkumu cukus ds fy; s gh fd; k tk l drk g\$ vuqNn 16 ; g l \$uf'pr djrk g\$ fd n\$ ds l Hkh ukxfjdka dks ukdjh ds l eku vol j miyC/k gkA

l \$kkfud l jpuk ds vk/kkj ij gekjs n\$ ea efgykva dh l j\$kk , oal eku vf/kdkj fnyku\$ g\$ vud dkumu d\$nz , oal jkT; ka us cuk; A buea l cl s egRo i\$kk] ykdl Hk\$, oal fo/kku l Hk\$ ea efgyk

I hvksdk vkj {k.k gā ; g 'kq vkr gōz Bkd dne dhA ml dsckn ukōdfj; ka ea vkj {k.k fn; kA efgyk vkj {k.k vf/kfu; e ykōl Hkk }kjk fdUgha dkj .kka l segj ugha yxkbz tk l dh gā fdUrq dñz l jdkj ijh rjg l s iz kl jr gS fdUrq D; k bu l cl s efgykvka dks og l Eeku] og l eku vf/kdkj] og ifr"Bk] og txg fey ik; xh] ugha D; kōd dōy dkum cuk nūs l s l c Bhd gks tkrk gS, d k ugha gā gekjs nsk ea , d /kkj .kk cgr rkd r ds l kFk mHkjr gS fd dkum dks dS srkMk tk; A tc Hkh dkbz u; k dkum ; k fu; e curk gS rc ge mudh vPNkb; ka ij cgl djrs gq s mul s cpus ds mik; T; knk <rs gS ; k rkmus ds rjhds <rs gā

mil gkj % efgykvka ij vkt gks jgs vR; kpkj ij T; knk crkus dh vko'; drk ugh gS D; kōd ge vk; sfnu l ekpj i = ka e if = dkvka ea i < rs jgs gā gky gh ea , d jk"Vh; vij/k l kōl; dh dh fji kō/ vkbz gS ftl ds e r fcd nsk ea gj ?k. Vsean kscyk Rdkj] pkj NM- kkuh , oa ifr; ka ; k l xs l cō/k; ka }kjk l kr efgykvka dks ekjus ihVus ; k i r k f M r djus dh ?kVuk; a ?kVrh gā mRi h M u] i r k M u k v k a v k s v o g y u k v k a d s c h p L = h d h ; g n'kk rc rd l ekr ugh gksxh tc rd dh 'kksk.k d r k z v i u h l o n u g h u r k d s R ; k x u n ā i q "k v H k h H k h v i u s v g o k j d s d k j . k L = h i j o p L o c u k d j j [k u k p k g r k g ā f d U r q g e s ; g H k h u g h a H k y u k p k f g ; s f d ; f n , d k l H k h t x g g k r k r k s v k t e f g y k ; a b r u s A p s i n k s i j v k l h u u g h a g k r h A

, d ckr Li"V gSfd D; k fo'o dk dkbz Hkh i q "k ; g i w k z f o ' o k l d s l k F k d g l d r k g S f d L = h d s e e R o , o a L u g d s c x s m l u s v i u k l ā w k z t h o u 0 ; r h r f d ; k g ā L = h f d l h u f d l h : i e s i q "k d s l k F k j g r h g S t s } t u u h] i s l h i R u h] v k f n A r c t k s L = h t h o u d k s l ā w k z k n s h g S m l i j v R ; k p k j D ; k ā ' k k s k . k d r k z d o y l P p s e u l s , d c k j d n { k . k d s f y ; s v i u h v k l s c n d j d s d Y i u k d j s , o a L = h d s c x s l ā k j] n s k j l e k t , o a i f j o k j d s c k j s e a l k p } v k s c r k ; s f d D ; k L = h d s c x s t h o u d k d k b z v k / k k j ' k s k j g x k A

l q-lo % efgykvka ds ifr gks jgh fgd k] vR; kpkj dks jkōdus ds fy; s i q "k , oa efgykvka nks dks , d l k F k l g H k x h g k u k g k s k A b l d k v k j k g e s v i u s i f j o k j l s d j u k g k s k A e k r k & i r k d s : i e s c s / h d k l j { k . k } i f r d s : i e a i R u h d k l E e k u , o a c s / s d s : i e a e k r k d s i f r n k f ; R o l s l e k t l s f g d k v k s v R ; k p k j k a d s g j g k y e a g j : i e a f e V k ; k t k l d r k g S f d U r q ; g d k ; Z v d y k i q "k u g h a d j l d r k i q "k d s l k F k e f g y k v k a d k l g ; k x v k o ' ; d g S D ; k ā d g j i q "k ' k k s k . k , o a v R ; k p k j d k s c < k o k n s u s d k d R ; u g h d j r k g S c f Y d , d s i q "k a d h l ā ; k v f / k d g k s x h t k s b u n i d e k z i j j k o d u s d s f o p k j j [k r s g S d o y g e a , d s u k x f j d k a d h [k k s t d j u k g k s k t k s l q k ' k k r , o a m l u f r e a T ; k n k f o ' o k l j [k r s g ā

ge , d u ; s ; q d k v k j k d j a t g k W L = h , o a i q "k l g H k x h c u d j L = h d s f o :) g k s j g h g l h d k f o j k s k d j ā L = h d s l k F k g k s j g h m R i h M u , o a f g d k t k s f d l h H k h : i e a g k s m l s v k t g h u g h a j k o d k x ; k r k s L = h d k t h o u ' k u % ' k u % v k s v f / k d n q z y] g l h] , o a i d k / k u d k l k / k u c u d j j g t k ; s k A

Åj uea ----- "ftl dsfcuk nfu; k dh dYiuk ugha dh tk l drh] l ā k j dh jfp; rk nHk dh ekjh ugha gā ml dk vkRe fo'okl fdl h dks pūks h ugh nsk] vxj gkFk mB tk; srk s vkl eku l dōk dj ijs gks tk; } ij og rks fl QZ ueu d r h g ā v i u h { k e r k v k a d k s p u k s h n s u s o k y s d k s y y d k j } r k s i k r k y F k j z t k ; } i j o g f l Q Z e k u d h H k k " k c l y r h g ā f u t h b e a i . k o g h Q n d r h g S t h o u d k i o k g m l h l s g s o g L = h g S l t d g s i k y u g k j g S v l u i w k z g S e k j g ā

Contributory Article (Section in English)**DRUG RESISTANCE: WHY DO WE NEED TO COMPLETE THE COURSE OF MEDICINES?****Rajendra Namdev**

School of Studies in Biotechnology,
Jiwaji University, Gwalior, Mahdy Pradesh. India
Email : rajendra.namdevbt@gmail.com

Abstract

We are often strictly advised by doctors to complete the full prescribed medication course because if we avoid the same then this may lead to drug resistance. Drug Resistance is the reduction of effectiveness of a drug such as an antimicrobial, in curing a disease.

Text Matter

Drug resistance is the condition when drug is not intended to kill or inhibit the pathogen. Here we need to know that usually Drugs are of two types-

1. Static (Bacteriostatic)
2. Cidal (Bactericidal)

Static (means to stop) drugs usually stop the growth of the micro-organisms.

Cidal (means to kill) drugs usually kills the micro-organisms.

More commonly the term is used in context of resistance that pathogen have “acquired” that is Drug resistance.^[1] Drug resistant traits are accordingly inherited by subsequent offspring, resulting in a population that is more drug resistant. Unless the drug use makes horizontal gene transfer or sexual reproduction or cell division impossible in entire target population, resistance to drug will inevitably follow. This can be seen in cancerous tumors where some cells may develop resistance to the drug used in chemotherapy.^[2] Chemotherapy causes fibroblasts near tumors to produce large amount of a protein called as WNT16B, Which stimulates the growth of cancerous cells which are drug resistance.^[3] In 2012 Malaria has become a resurgent threat in South East Asia and Sub-Saharan Africa, and drug resistant strains of Plasmodium falciparum are posing massive problems for health authorities. Leprosy has shown an increasing resistance to dapsone.^[4]

Mechanism of Drug Resistance

1. Drug inactivation or modification: Micro-organisms which are resistant for Penicillin produce an enzyme called as “penicillinase” that hydrolyse the β -lactum ring of penicillin.
2. Alteration of target site: Pathogens often become resistant simply by preventing entrance of drugs. Many gram negative bacteria are unaffected by penicillin G because it can not penetrate the outer membrane of envelop because of some genetic mutations leads to changes in penicillin binding protein also render a cell resistant.
3. Alteration of metabolic pathway: Some sulphonamide resistant bacteria do not require Para-amino benzoic acid (PABA), an important precursor for the synthesis of folic acid because they used performed folic acid from their surroundings. Instead like mammalian cells, they turn to utilizing preformed folic acid. “Sulphonamide inhibits the synthesis of folic acid and nucleic acid in bacteria.”

4. Reduction of drug accumulation: Micro-organism acquires resistance by decreasing drug permeability or increasing active efflux of drugs across the cell surface.^[5] Some pathogens have plasma membrane translocase, often called efflux pumps, that expel drugs because they are relatively non specific and can pump many different drugs, these transport proteins are often called multiple drug resistant pumps. Many are drug/proton anti porters that means proton enters to the cell and drug leave the cell, such systems are present in E. Coli, P. aeruginosa and S. aureus.

Mechanism - How micro-organisms get resistant for a particular drug?

General mechanism of drug resistance. "Each fragment have a quality to make a new micro-organism and this micro-organism will be a resistant to that particular drug".

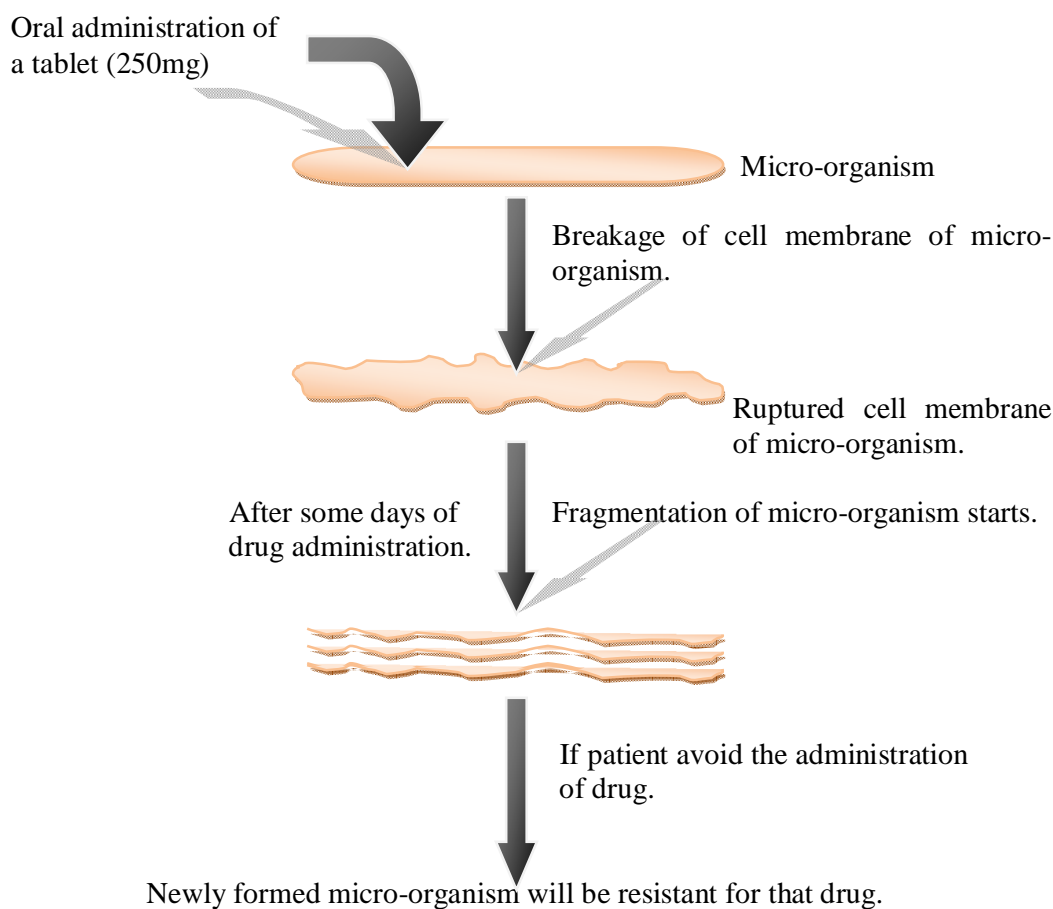


Figure showing: how micro-organisms get resistant for a particular drug.

Drug resistance is the major problem of this era, we just need not to do such things which leads to drug resistance like Incomplete course of prescribed medicines. Also have to avoid the overuse of antibacterial cleaning products in the home, may be by producing strains of multi-antibiotic-resistant bacteria. Drug resistance develops naturally, but careless practices in drug supply and use are hastening it unnecessarily.^[6] The chances of drug resistance can sometimes be minimized by using multiple drugs simultaneously. This works because individual mutations can be independent and may tackle only one drug at a time, if can

individuals are still killed by the other drugs, then the mutations cannot persist. This was used successfully in tuberculosis. However, cross resistance where mutations confer resistance to two or more treatments can be problematic.^[7] The development of antibiotic resistance in particular stems from the drug targeting only specific bacterial proteins because the drug is so specific, any mutation in these proteins will interfere with or negate its destructive effect resulting in antibiotic resistance.^[8]

Conclusion

There has been some progress in developing new antibiotics that are effective against drug resistant pathogens. Two new drugs are fairly effective against vancomycin resistant enterococci. Synercid is a mixture of the streptogramin antibiotics quinupristin and dalbavancin that inhibits protein synthesis. A second drug, linezolid (Zydox), is the first drug in new family of antibiotics, the oxazolidinones. It inhibits protein synthesis and is active against both vancomycin resistant enterococci and methicillin resistant staphylococcus aureus. Target altering pathogens are Staphylococcus aureus, vancomycin resistant enterococci and macrolide resistant streptococcus, and antibiotic modifying microbes are Pseudomonas aeruginosa and aminoglycoside resistant Acinetobacter baumannii.

Recommendations

Avoid the over use of bleach, tooth brushing and mouth washing. Complete the course of medicines prescribed by doctors. Avoid the over use of anti-biotics, disinfectants detergents, shampoos and anti-bacterial soaps, surface sprays, application of deodorants, sunblocks and any cosmetic or health-care product, insecticides, and dips. Avoid the over use of hand washes.^[9,10,11,12,13]

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Contributory Article (Section in English)**GENETIC ENGINEERING AND THEIR SCOPE****Gunjan Masih**

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Abstract

Genetics “pertaining origins”, coined 1831 by carlye from Gk. *Genetikos* “genitive”, from genesis “origin”. Genetics is the study of heredity. Heredity is a biological process where a parent certain genes transmit on to their children or off spring. Every child inherits genes form both of their biological parents and these genes in turn express specific traits. Some of these traits may be physical for example hair and eye color and skin color etc, on the other hand some genes may also carry the risk of certain diseases and disorders that may be pass on from parents to their offspring.

Text

Gregor Mandel is the father of Genetics. During the 1850s discovered certain principles that govern transmission of hereditary characters in the garden pea. This science has opened up new avenues for its application in animals, plants, and even humans.

Genetic engineering is the technique in which the genetics constitution of an organism (bacterium) is altered by introducing new genes into its chromosomes. The manipulation i.e. addition, removal and repair of any gene can be done in the cell by which the desired external characters of an organism can be obtained. This branch of genetics is called genetic engineering. The genetically modified organisms (GMO) thus produced is grown to multiply fast and the gene products is obtained in large quantities. The hormone insulin was the first such product. The insulin producing gene of mammals has been successfully introduced in certain bacteria which have been made to produce it. Some old successful experiments, this hoped for genetics engineering that it is useful for man in near future.

Explanation of genetics engineering

There are two steps in genetics engineering. First step in genetics engineering is the separation of required genetic material. Second step in genetics engineering is transfer of genetic material from one organism to another organism or from test-tube to organism.

First step in genetics engineering is the separation of required genetic material. The work of gene extraction and purification was done by H.G. Khurana in 1970 and his associate’s synthesized genetics code for *t*-RNA molecule. This gene was (77 nucleotides) small in sized but from synthesis it was concluded that a long chain of gene can also be synthesized in the laboratory.

Second step in genetics engineering is transfer of genetic material from one organism to another organism or from test-tube to organism.

Scientists have completed this work by an old method called transformation. In 1971, National Institute of Health, USA, performed the successful transfer of bacteriophage DNA into human cells. In this DNA, one gene was present which give information to the enzyme which is responsible for metabolism of galactose. This enzyme was not found in man before the injection of DNA into them, but after injecting, the production of this enzyme started in human being, and this character also found in their offspring's. Hence it is concluded that this gene can make replica like a normal gene.

Modern genetic technique is very useful for gene manipulation means to insert gene with desirable quality into genome of an organism and desirable product can be obtained. Such organisms, in which foreign DNA is inserted in their genome, are called transgenic organisms and this process is transgenesis.

The common technical tools used in genetics engineering are as follows-

1. Restriction endonuclease enzyme.
2. DNA vectors.
3. DNA ligase enzyme.

Now genetic engineering according to tools

1. The desired DNA is cut and separated by restriction endonuclease enzyme.
2. This desired DNA is inserted into the DNA vectors. For this, DNA vector is also cut by the same Restriction endonuclease.
3. Desired DNA is joined in DNA vector by ligase enzyme. This vector is called recombinant vector. There are many possibilities of genetic engineering for human welfare in future.

Scope of genetic engineering

Genetics investigations have given many good results. Scientists are working for better uses of this technology in new terms.

Industrial use- By coding the vitamins, antigens or hormones of high organisms and synthesizing DNA (s-DNA) establish again in form of gene to synthesize, vitamins, hormones, for commercial use.

Medicinal use- By genetics engineering many diseases are cured and new medicines are synthesized which are helpful in the treatment of hereditary diseases such as haemophilia, phenyl ketonuria.

Agricultural use- Genetics engineering plays a role in the field of agriculture because in less time large quantity crop yield is only possible by Genetics engineering, for example transfer of Nitrogen fixing gene from blue-green algae to grain crop is possible. Due to which, these crops can fix atmospheric nitrogen and which can replace the use of artificial fertilizers.

Conclusion

The formation and the use of desirable type of plants and animals are possible by change in gene structure and gene expression.

Contributory Article (Section in English)**BIOTECHNOLOGY: GLOBAL ENVIRONMENTAL PROTECTION****Archana Chaturvedi**

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Abstract

Our surrounding is termed as environment, which includes abiotic (Nonliving) and biotic (Living) components. Due to increased and intensified anthropogenic activities the presence of undesirable substance have been increased and produced environmental pollution. Ozone depletion, Green House effect, Global Climate changes or Global Warming etc. are the main issues in environmental sciences. In this concern Biotechnology helps us to overcome from these problems and conserve the natural resources also.

Text Matter

Our environment consist of abiotic components includes air, water, soil, etc. and biotic components includes all living organisms such as plants, animals, micro organisms etc. direct or indirect human activities create environmental pollution. The major sources of environmental pollution are industries, agriculture and other anthropogenic and biogenic sources etc. in this context the importance of and impact of biotechnological approaches and implication of biotechnology has to be thoroughly evaluated. There has been serious concern regarding the use of biotechnological products and the impact assessment of these products due to their interaction with the environment from pollution but also to use it to conserve the natural resources. Biotechnology have major implications of the environment, few of them are discussed here:

- (A) Biotechnology is being used to provide alternative cleaner technology which help to further reduce the hazardous environmental implication.
- (B) In Paper industry the pulp bleaching technology are being replaced by more environmental friendly technologies involving biotechnology. The pulp processing helps to remove the lignin without damaging valuable cellulosic fibres but the available techniques suffer from the disadvantages of high costs, high energy use and corrosion.
A lignin degrading and modifying enzyme was isolated from *Phanerochaete chrysosporum* and was used on one hand helped to reduce the energy costs and corrosion and on the other hand increased the life span of the system. This approach helped in reducing the environmental hazards associated with bleach plant effluents.
- (C) Bioremediation: the use of microorganisms for the removal of contaminants or pollutants is generally referred to as bioremediation, where microbes serve as scavengers. Bioremediation is carried out in two ways:

In situ bioremediation: Microbial degradation of xenobiotics in the site of pollution which could be soil, water etc. *in situ* bioremediation is generally used to clean up of oil spillage, beaches etc.

Ex situ bioremediation: In this the waste and toxic material is collected from the polluted sites and the selected range of micro organisms carry out the bioremediation.

Xenobiotics: Xenobiotics (xeno- foreign) refers to unnatural foreign and synthetic chemicals such as pesticides, herbicides, refrigerants, solvents and other organic compounds. The microbial degradation of xenobiotics also helps in reducing the environmental pollution. Microbes such as *Pseudomonas* and their strains, *Nocardia*, *Mycobacterium*, *Alcaligenes* etc. efficiently degrade xenobiotics. In recent years efforts have been made to create genetically engineered microorganisms to enhance bioremediation. This is done to overcome some of limitations and problems in bioremediation.

(D) Reduction of Carbondioxide (CO₂) content through biotechnologically: It is well known that CO₂ is main cause of Green House effect and rise the atmospheric temperature. There is a steady increase in the CO₂ content due to continuous addition of CO₂ from various sources particularly from industrial processes. Through biotechnological method its increased value in the environment can be reduced by-

- a. Photosynthesis
- b. Biological calcification

During photosynthesis plants utilizes CO₂ and reduce the CO₂ content in the atmosphere. Certain deep sea organisms like corals, green and red algae store CO₂ through a process of biological calcification.

(E) Sewage treatment: Biodegradation of sewage require constant supply of oxygen to degrade organic matter to smaller molecules. Process of supplying oxygen is expensive, tedious, and requires a lot of expensive manpower. These problems are overcome by growing micro algae in the ponds and tanks where sewage treatment is carried out. The algae release the oxygen while carrying out the photosynthesis which ensures a continuous supply of oxygen for biodegradation.

Conclusion

A vision of new application of biotechnology for global environmental protection: The environmental impact assessment system requires proponents to foresee possible environmental impacts when a development project is being planned and to conduct an environmental assessment. However, debate continues on exactly what kinds of environmental protection measures are needed and how they should be integrated into a given project to achieve desirable environmental results.

Recommendations

Action to deal with global warming and to prevent ozone layer depletion are gaining momentum but currently available technologies may not be enough to meet the required targets. Technological advances are needed in order to make progress in solving these issues. New development is also needed in technologies for pollution removal and environmental restoration, in cases where environmental pollution has already been generated or is already accumulating in the environment.

Contributory Article (Section in English)**THE SOCIO-ECONOMIC IMPORTANCE OF BIOLOGY****Umesh Prasad Patel**

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Abstract

By exploiting the variety of ecosystems man has conquered all the mountains, valleys, rivers and many in-accessible areas and carved ways through them. The ecosystems provide us with many benefits and services. Biodiversity encompasses all the varieties of the plants, animals and living organisms and is of great concern to the needs of mankind. The nature has and is suffering a lot at the hands of man right from the beginning of his journey from a nomad to the so called civilized human.

Text Matter

As we all know the earth originated 4500 million years ago. The first life forms on earth have been reported in the form of the bacteria and algae 3000 million years ago. The first trees originated in the Devonian period. The humans were first reported in the Cenozoic era. From the time of origin of the humans, they have been dwelling in the forests as wanderers in search of food and shelter. Man slowly learnt the art of making fire and cooking food and finally the art of cultivating cereals and pulses and settling down to give rise to the great civilizations as the Harappan, the Mesopotamian, the Nile Valley and the Mayan Civilization.

As the needs of the humans have increased, so have the new inventions. By exploiting the variety of ecosystems man has conquered all the mountains, valleys, rivers and many in-accessible areas and carved ways through them. It is only with the help of nature that man has been able to achieve such heights of ambition. He has been able to change the direction of the rivers, clear huge forests areas for the agricultural land and construction of dams to meet his needs for water, tame and domesticate many animals like sheep, goat, cow, dogs to fulfill his needs and demands and also animals like tigers, lions, elephants, seal, dolphins etc to host circus to earn his living.

All the varieties of the plants and living organisms and is of great concern to the needs of mankind. Man from the date of his origin is evolving, utilizing the bounties provided by Mother Nature. Biodiversity, in different ecosystems like fresh water, marine water, forest, wetlands, and agricultural ecosystems. All these ecosystems have many economic importance to man. At the ecosystem level, biodiversity provides the conditions and drives the processes that sustain the global economy and our very survival as a species. Socio economic importance of biodiversity is not complete without mention of coastal waters. Mangroves are the most important part of the coastline. The presence of mangrove ecosystems on coastline saves lives and property during natural hazards such as cyclones, storm surges and erosion.

The ecosystem has a very large unexplored potential for natural products useful for medicinal purposes and also for salt production, apiculture, fuel and fodder, etc. But Anthropological pressures and natural calamities are the enemies of the ecosystem. Growing industrial areas

along the coastlines and discharge of domestic and industrial sewage are polluting these areas. Many studies have highlighted these problems and the conservation efforts are being considered. Another important characteristic are the estuaries of Indian coastline. An estuary is a semi enclosed coastal body of water. It is here that the river meets the sea in shallow, protected bays. The estuary serves a banquet of decaying plants, tiny floating plants and animals called plankton, and little fishes. Millions of sea animals get their start in life feeding in the quiet waters of the estuary. They can find shelter in salt marshes, beds of slender eelgrass, or wide mudflats. An estuary has very little wave action, so it provides a calm refuge from the open sea. Some of the animals, such as flounder, eels, and striped bass are just visitors to the estuary. Flush with nutrients and inhabited by resilient organisms, estuaries are among the most productive ecosystems on earth

Plantations of many important trees yielding fruits like mango, apple, litchi, strawberry, cashews, walnut, tea, coffee, fibres (viz. *Crotalaria juncea*, *Coccus nucifera*, *Hibiscus malvacearum*) etc. Bagasse from sugarcane, cyperus and grasses are raw material for paper production. The bee rearing as Apiculture for production of honey is also a commercialized. The sericulture for the production of silk by rearing the silkworms on the *Morus alba* produces commercial and very fine silk. Growing economically important trees like mango, sag, Sal, etc along with the food crops as agro forestry also promotes more biodiversity and act as source of income. Horticulture involves growing economically important crops, Olericulture, Floriculture, Pomology and Ornamental plants. All these branches of horticulture are being encouraged acting as a source of earning money. The fibers and silk are used in textile industries for preparation of the clothes, bags, carpets, baskets etc. and are were a good source of income as cottage and small scale industries. The leather as derived from the skin of some of the animals are used in preparing clothes, coats, shoes and covers of the sofa. The Silviculture practices also help in plantation of timber and fuel wood which would also help to suffice the needs of the rural people for fire wood and will provide food security at times of unfavorable climate.

Conclusion

It's no mystery why people are prepared to spend so much to get close to nature. Human beings instinctively derive aesthetic and spiritual satisfaction from biodiversity. Recent studies have begun to confirm what has always been known our emotional wellbeing is enhanced by the proximity of natural beauty.

Recommendations

Animals, Plants and Water are the most important part of human life. These are main sources of economy. It should be protected and conserved by human beings.

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Contributory Article (Section in Hindi)

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Hkkjrh; I nj I snu dk; De % Hkkjrh; ea I nj I snuh dk; De ka dk 'kjkjEHk I Ukj ds n'kd ea nks vuqz kxh I nj I snuh mi xgka HkkLdj&1 rFkk HkkLdj&2 ds I Qy i{kj .kka ds I kFk gq/kA bu HkkLdj mi xgka }kjk I s/kybV ekbØkoo jSM; kshVj ¼ ehj½ ds I kFk feydy iklr fd, x, vud egkl kxjh; ,oe-okrkoj.kh; vkpMka dk I Ec) {ks=ka ea I d k/ku i{dku gsg I Qy mi; kx fd; k x; kA bu I Qy vuqz kxka ds vuhkoka dh I gk; rk I sgh Hkkjrh; us 1988 ea vkAvkj, I &1, ½of.M; u fjekV/ I dI x I s/kybV I hjht&1, ½ dk 'kjkjEHk fd; kA bl h J{kkyk dks vkxs c<krsg 1991 ea vkAvkj, I &1ch rFkk 1994 ea vkAvkj, I &ih2 i{kfir fd, x, A bu I Hkh dks lexz : i I s feykdj , u, uvkj, e, I (National Natural Resource Management System) uked , d fof'kV Hkkjrh; mi xgh; I xBu dks I eLr fo'o ds I e{k iLr dj Hkkjrh; us viuh I nj I snuh ioh.krk dk ifjp; fo'o foKku fojknjh dks dj; kA bl ds ckn I s vc rd fujlurj vkAvkj, I &1I h tS h vud vR; k/kfud I nj I snuh mi xg J{kkykva ds I Qy i{kj .kka ds I kFk I kFk mul syxkrkj vftz fd, tk jgs egroi wZ o mi; kxh vkpMka ds ek/; e I s Hkkjrh; us foKku ds I nj I snuh {ks= ea viuh , d vfrfof'kV igpku cuk yh gA Hkkjrh; dh py jgha vud I nj I snuh ifj; kstuvka ds vLrxz fd, tk jgs dk; kA I s iklr vkpMka dk mi; kx nsk ds fofHklu I kFkkuk m| kxka vLj fofHkxka }kjk cM= i{kus ij Hknty is ty tS s vud i{kfrd I d k/kuka gsg LFkkuh; ekufp=kQ Ol yka o df'k mRiknuka ds i{okupkuka ,oe-ouka I dkh tkudkfj; kQ rFkk tfofo/krk] fgei kr o fgeun v/; ; ukavkn dsfy, fd; k tk jgk gA

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I nj I snu ,oe-egkl kxjh; vud akku % I nj I snu I s iklr mi xgh; fp=ka dk mi; kx egkl kxjh; vud akkuka ea Hkh fd; k tk jgk gA gkykfd ; g dgk tk I drk gS fd ; g vuqz kx vHkh viuh 'kskokoLFkk ea gh gA mi xgh; fp=ka ea egkl kxj ds fofHklu jacka ds ek/; e I s egkl kxjh; I d k/kuka dh igpku dj ikuk I nj I snuh rduhfd; ka bl {ks= ea fd; k x; k i{kFfed vuqz kx gA bl nF"V I s vud I nj I snuh mRd"V rduhfd; ka tS s dktVy tks dyj Ldsuj] ekWjV/ fj I KY; wku beftx LiDVkjSM; kshVj ¼ evkMhvkA, I ¼ I hMcy; wvkA, Q, I] vkdzthvkA, I] , I ih, I , I] , oD; wy I oJ] , oh, pvkvkj rFkk vkdzjkbv vkfn dk mi; kx fofHklu egkl kxjh; vud akkuka tS s i knilyodh; o gfjryodh; mRiknu] fofok tHkijkl k; fud pØk I epz I rgh rki ekuj Vki kxkQh] cFkfeVh vkfn eafd; k tk jgk gA

mi; ðr rduhfd; ka ds iz; ks l snsk dh fofHku l eL; kvka dk gy fudkyk tk jgk gA l ñij l ñonh rduhfd; ka }kjk lepnz ds , d s {ks=ka dk irk yxk; k tk jgk gS tgl; nksuka idkj ds tñod o vtñod l d k/ku vf/kd ek=k ea mi yC/k gka tñod l d k/kuka vFkkZ~fofHku rjg dh eNfy; ka, oe- vU; l eph thoka ftudk mi; ks [kk|kuka ds : i ea fd; k tkrk gS dh lepnz ea mudh cgyrk n'kkZus okys {ks=ka ds fo"k; ea irk yxkus ds fy, fofHku l ñij l ñonh rduhfd; ka dk mi; ks fd; k tk jgk gA bl fe'ku ds l Qy gkus l scMh ek=k ea leph [kk|kuka ij fuHk] jgus okyh , d cMh rVorh vkcknh dh [kk| l ñakh l eL; k dks l gy>kus ea l gk; rk fey l dsxhA bu rduhfd; ka }kjk egkl kxjka ea fNiha vdir vtñod leph l Elnkva tS s cgew; /kkq/kh [kfut o ry ds Hk.Mk]ka dk Hkh irk yxk; k tk jgk gS ftl l sfo'olrj ij l ñe/kr okf.kT; d o vkfFkZl 0; oLFkk ea viuh Hkxhnhkj l fuf'pr dh tk l dA bu rduhfd; ka dsek; e l svc ekS e l ñakh imkZuoku yxk, tk l drsgS ftuds }kjk dFk l ñakh mfr o Rofjr fu.kZ yusea l jyrk gks tkrh gA bl ds vykok l kFk gh leph vkinkva tS s rñkuh pñokra ; k l ukeh dh prkouh le; ij fey tkus l s l EHkkfor tkueky ds upl ku l s Hkh cpk tk l drk gA bl h rjg l ñij l ñonh rduhfd; ka ds mi; ks l siMk h nskka dh leph ?kq i B dk Hkh vkl kuh l sirk yxk; k tk l drk gA vr%Li"V gS fd l ñij l ñonh rduhfd; ka ds egkl kxj; vuq dku ds {ks= ea vuq; ks l snsk dh okkfud Nfo ea fu[kk] ds l kFk l kFk viR; {k : i l sm l dh vkfFkZl l kelftd , oe-j {kk ds {ks= ea Hkh l ñkkj o l ñ<rk vk jgh gA Qyr%nsk dks xjch o Hk[kehj tS h tkuyok l eL; kvka l seðr dj; k tk l dsxk vkSj Hkjr dks ml ds le) o l d Ei lu nsk gkus dh foydr gks pñh ifr"Bk l si p%foHk"kr fd; k tk l dsxkA

l ñko %vr ea ; gh dgk tk l drk gS fd fjekV l ñl x rduhfd; ka us ekuo dks Å'oj rd igpkus dk ekxzfn[kyk fn; k gA vius mi xgka dks iFoh dh d{kk ea LFkkfir dj og igys gh ekuks Å'oj dk iMk h gkus dk ntZ gkfl y dj pñk gA vkSj vc og fnu ñij ugha tc og viuh blgha l ñij l ñonh rduhfd; ka ds mi; ks l segkl kxj ds xHkZ l sver dks fudkyus ea dke; kc gkcka

l nHkZ

- ekS/ks kSkh vkbZlnk ¼1995½ vkS'kukSxfQd , flyds ku l v,Q fjekV l ñl x A l hvkj l h çd i"B 512-
- LVhyS tsds rñdZ u , .M , l - FkkS ½2001½ , UI kbDyki hfM; k v,Q vkSku l kbZ d A l u fMxks : , dMfed çd ¼6 o,Y; ½½ vkbZ l ch, u 0&12&22743&, D1
- vkbZ/kj, l l VsykbV4 bu bl jks okf"kZl fji kS/Z o"kZ 2006&07
- tsuk ch] Mh Low] , - R; kxh] ½2010½ , flyds ku vkQ vkfVfQfl ; y U; jky usVodA Qkj l h l jQd fo.M LiHM fjVtkboy Yke vkÅvkj, l &ih4 ¼e, l , evkj½ ckbVud Vñijpj] vkÅÅA ftvkl kbZ , .M fjekV l fl x yV l Z ¼vkÅÅA th, l vkj, y¼ okY; ½ 7] uEcj 3 ist 567-571] MhvkSvkÅ : 10.1109/, ythvkj, l .2010.2041632 ; vkÅ, Q 1.379A
- tsuk ch] , l - l kgV , e-oh- jko] ch- ds l kgV ½2010½ , dkEijsVo vl d eV vkQ vkÅvkj, l &ih4 ¼e, l , evkj½ fMjkbOM l h l jQd Vñijpj , .M l h l jQd fo.M LiHM vkQj n ukfZz bf.M; u vkSkuA b.Vjusuy tuZy vkQ fjekV l fl x ¼vkÅtsvkj, l ¼A ; vkÅ, Q 1.089A

Contributory Article (Section in Hindi)

/ofu inñk.k l sc<rh chekfj; ka

onuk nq̄s

,uok; jeW , .M l ksky oyQs j l kd k; Vh [ktjkgk&471606

Email: estatesgodavari@gmail.com

iLrkouk % l Hkh thou tle l sydj eR; qrd vius thou dky ea okrkoy.k ds l Hkh ikdfrd l k/kuka dk Loræ : i l s mi; kx djrs gq s viuh tfoð fØ; kvka dks l Eikfnr djrs gA dkbZ Hkh , d h i fØ; k tks ikdfrd l k/kuka ds Loræ mi; kx ea ck/kk mRiUu djrs gS inñk.d dgykrs gS vkj tc ; sinñk.d vko'; drk l svf/kd gkrs gS rks , d h i fØ; k dks inñk.k dgrs gA

fo"K; oLrq % inñk.k dks l e>us l sigys gea vko'; drk gS mu ?kVukvka dh ; k mu dkjdka dh tks inñk.k QSykrs gS vFkkZ~ inñk.d] okLro ea inñk.k tks inñk.k ds fy; sftEenkj gkrs gS gekjs okrkoy.k ea ; k rks ifgys l smi fLFkr gkrs gS ; k fQj ekuo tfr }kjk fd; s x; s dk; k ds ifj.kke Lo: i mRiUu gkrs gA ekuo }kjk vfu; fer ; k vl ko/kkuh l sfð; s x; s dk; k dk ifj.kke inñk.k gkrs gS D; kfd tc ge fd l h dk; Z dks fcuk l kps l e>s , oa vfu; ã=r rjhds l s djrs gS rks og iR; {k ; k viR; {k : i l s gekjs Hkh thou dks inñkfor djus yxrk gA vkj tc ; g vko'; drk l svf/kd gkrs gS rks bl ds fu; æ.k ds fy; s gea gh l kpus ij etcj gksuk iMf k gA inñk.k l s gkrs D; k gA inñk.k vuko'; d ek/; e mi; kx l s ; g ikdfrd l iñkvka dks gkfu djrk gA c<s gq s inñk.k dks fu; ã=r djus dk dke ekuo l ekt dks mBkuk iMf k gA vkj l clsvge ckr rks ; g gSfd inñk.k ekuo LokLF; dks [kjc djrk gA inñk.k dbZ idkj ds gkrs gS tS sok; q inñk.k] ty inñk.k] Hkfe inñk.k vkj /ofu inñk.kA

/ofu inñk.k % , d fo'kSk idkj dk inñk.k gS tks ekuo ds fØ; kdyki ka ds l kFk Lo; aeutj; ds }kjk mRiUu gkrs gS vkj eutj; dh dk; Zdkykr ds l kFk eflr" d ij viuk iñkko Mkryr gA /ofu inñk.k vk/kqud thou dh nu gA c<rh gkZ tul ; k] ; kã=dh idkj dk ifjogu] eukjatu dsu; &u; s l k/ku /ofu inñk.k dk iæ[k dkj.k gA /ofu dks dñ bl idkj l e>k tk l drk gA fopkjka ds vñku&inku ds fy; s dh xbZ vkokt /ofu dgykrh gA vkj tc ; g vkokt t: jr l s T; knk gkrs gS rks ; g inñk.k dk : i ydj /ofu inñk.k dgykrh gA rst /ofu dks 'kkj dgrs gS 'kkj , d yfVu 'kñ gS tks ukf'k; k l s cuk gS ukf'kvk dk vFkZ gkrs gS "vkek'k; fti s ge iV dg l drs gS Lrj rd vius dks chekj" vFkkZ bl Lrj rd eglW djuk fd mYVh gks tk; A 'kkj , d vupkgh ukil n /ofu gkrs gA 'kkj fd l h LFkku ij xyr rjhds l s xyr l e; ij dh xbZ /ofu gkrs gA vr% , d h /ofu tks vPNh ughayxrh ; k rhoz /ofu dks 'kkj dgrs gA

/ofu inñk.k ds L=k % ikdfrd : i ea eRk dh xtZ iæ[k gA bl ds ckn ekuo }kjk fufeR L=k ekVj; ku tS s cl] Vd] ekVj] LdWj] dydkj [kkus m] kx] jyxkfM; k gokbZ tgkt , oa 'kkj djus okys l gk; d ; æ jSM; k ykmM Lohdj] l k; j d] gkuZ , d vU; ok] ; æ iæ[k gA orZku ifjosk ea /ofu inñk.k dk , d ; æ gekjk vFkkUu vx cu x; k gS og gS eksby fti s oKkfudka usekua dh vko'; drk ds fy; s cuk; k yfdu ge mudk iz kx fti : i ea dj jgs gS og dYiuk l s ijs gA

/ofu dh rhork ykuZcjkehVj vFkok l kukehVj l sekih tkrh gA /ofu rhork dh bdkbZ dk uke Md hcy] ea cy ds nl oa Hkx ds cjkj gkrs gA cy 'kñ vYQM xtge cy ds uke ij j [kk x; k gA fti s vxat h ds v[kj d B l sn' kZrs gA rduhfd : i l s Md hcy /ofu nkc dh og ek=k gS tks 0-0002 ekbØkkl Z ds cjkj gkrs gA ekua dku 0 l s 180 Md hcy rd dh rhork okyh /ofu ds ifr l ñnu'khy gkrs gA 0 Md hcy l qus dh vol hek gA 50 l s 55 Md hcy l kekl; /ofu gkrs gS tcfð 70 l s 100 rhoz rFk 140&180 Md hcy /ofu /kkrd gkrs gA ekua LokF; ea 90 rhork dh /ofu Jo.k 'kDr dks {kh.k djrh gA l kekl; /ofu l qus dh 'kq vkr 0 Md hcy l s gkrs gA ifRr; ka dh [kMFkMkgV] Qd Qd kgV] , d ehVj dh njh l s ?kM dh /ofu] xfy; ka dk 'kkj xgy] 'kkr ?kj ea /ofu Lrj , oa dk; kZy; ka ea vkS r /ofu ds l kFk 'kkr Hk" k.k

dk /ofu Lrj yxHkx 10 Mā hcy ds vnrjky l sc<rk gpk 60 Mā hey rd gkrk gā ?kjsywfedl j xkbMj ea 85 Mā hey] Hkjh batbfu; fja odZk ki ea 95&105] fctyh ds dMelus ea 120] ekv/j l kbfdy fcuk l k; ybl j ds 130] mMku Hkjsr le; tM foeku dh /ofu 140 rFkk Vā ds l k; ju ea 150 , oajkdV batū dh /ofu 180 Mā hey rd gkrh gā jgokl h {ks=ka ea/ofu dk Lrj Lohdk; Zgskuk pkfg; A jgokl h {ks= 'kgj 35&40] xkeh.k {ks= 45&55] vksj kfxd {ks= 50&60 jSM; k; Vhoh VCR LVMM; ks ea 25&35] vLirky 30&35 , oal; k; ky; d{k 35&40 Mā hcy Lohdk; Zgā

/ofu inlk.k ds idkj %/ofu inlk.k ds idkjka ea okrkj.kh; , oamlj izkkyh i) fr ftl sl Lve bā/juy /ofu Hkh dgrs gā ied{k gā igyk okrkj.kh; 'kij bl ea ied{k : i l scEgkMh; 'kij ok; eMyh; vko'kSk.kh; 'kij fo|q pēcdh; fofdj.k bl ds vykok gekjh vkdk'kh; xakj Dokl kl i iYl kl Z vkfn l s vkrk gā ok; eMyh; vo'kSk.k /ofu 10 GHz l svf/kd gkrh gSyfdu oEgk.Mh; 'kij 16 Hz l s de gkrk gā U; ure okrkj.kh; 'kij csM 16 Hz ftl dks vkdk'kh; f[kMeh dgrs gā bl dk mi; kx l vkybV l pkj ds fy; sfd; k tkrk gā nūjk izkkyh fl Lve dh ckr djs rks; g fdl h Hkh fl Lve ds vnrj mRiUu gkrk gā 'kij dk U; ure Lrj rki h; 'kij dgykrk gS bl dks tkghl u 'kij Hkh dgrs gā 'kij dks vkrfjd 'kij rFkk ckg; 'kij ds : i ea Hkh oxhdr fd; k tk l drk gS vkrfjd 'kij , d gh dejs ea gkrk gS mnkgj.k cPpka dk fPykuk] njoktka dk [kV[kVuk] Quhpj dk fgyuk] jgus okya dh ckrphr dk 'kij A tcf d ckgj 'kij vkl & ikl LFkkuka ds jkjk gkrk gā tS s ekv/j; kuka dk] ckguka dk vkuk tkuk] ok; q ku] jy] ykmMLohdj l smRiUu /ofu A

/ofu inlk.k l s 'kjhj ea fodfr; ka išk gkrh gS vls gekjk thou iHkfor gkrk gā ikr% mBus l sydj jkr ea l kus ds ifgys rd , oaf lve ds jkjk jkr dks l ksr le; Hkh gekjs 'kjhj ij inlk.k dk iHko iMfrk gā rst /ofu l sl kus dh {kerk ea deh] ogjkiu] u l kus okys iHkoka ds vlrxr ckrphr l pkj ek; e ea glrk{ki} >pykv tksfd cjs crkb ea ifjofr gkrh gā ekuf l d fol xfr] m) .M] 0; ogkj] dk; Zdjus dh {kerk ea deh] U; jkfl l] fprk] uhm dk u vkuk] mPp jDr nkc] gnz l oguh jks] th fepykuk] FkdokV] Ropk rki Øe] ekuo Hkuk ds gn; xfr ds rhork] rā=dk rā= ea fol xfr] xHk kr , oabkx tS h Hk; kud chekfj; kamRiUu gkrh gā bl ds foijhr iHkoka ea fl j nn] ; gkard fd bZvkfl ukQhry; k] gk; ijYk; l fe; k] gkbi kkyk; l fe; k] gkb; kclYl hfū; k] HkhoukRed fxjkoV tS h fol xfr; ka išk gkrh gS tS ekuo LokLF; ds fy; s [krjukd l dr nrh gā

/ofu inlk.k fu; a.k %dh ckr djuk vkt ds le; ea tfVy dk; Z irhr gkrk gS fQj Hkh ekuo vxj l tx jgs rks /ofu inlk.k dks de djds vius LoLF; , oathou dks l qke; cuk l drk gā Lopfyr okguka l s gkus okys /ofu inlk.k dks l k; yd j ds iz kx jkjk fu; ā=r djsr gā dkj [kkuka ea ftu L=krka l s /ofu mRiUu gkrk gS ogka e'khuka ds [kjc dyi qkz ds cnysr jguk pkfg; s rFkk dkj [kus ea lykfLVd Q'kz dk iz kx djuk pkfg; A Hkou o bekjrka dh nhokjka ea /ofu vo'kSkh inkfz tS s VkbYl] /ofu okf/kdk dk iz kx djuk pkfg; A /ofu vo'kSkh o{k tS s uhe] v'kcd] ojxn] dStgkbuk l Med ds fdukjka ij yxkus l s /ofu inlk.k de fd; k tk l drk gā okguka ea de rhork ds gkuz gkus pkfg; A ftruk l Hko gks rhcz /ofu L=krka dks de djuk pkfg; A tgybl mRi o , oar; ksjka ij tkj & 'kij l sfQYe] l xhr] Mh-ts ds id kj.k ij dkuuh jkd yxuh pkfg; A i; kbj.k ea-ky; , oaoe ea-ky; us i; kbj.k l j {kk , DV 1986 ds vxrx /ofu inlk.k fu; e 2000 cuk; s ftl l sf d 'kij ds cjs iHko dks ekuo LokLF; , oagkfudkj d ekuo Skfud iHkoka dks jkd tk l ds; k fu; ā=r fd; k tk l dā

mi l gkj %vrr%eā; gh dguk pkgkh fd /ofu inlk.k orēku ea egkekjh dh rjg Qsy jgh gā ftl l su dōy gekjs LokLF; ij foijhr iHko iM+jgk gā ofYd ?kjsywfgl k; a , oavki jkf/kd iDrRr Hkh dgau dgau bl /ofu inlk.k dk dkj.k gks l drh gā D; kcd l rfy , o'kkr fnekx gh l gh fn'kk ea dk; Zdj gekjs thou dks l qke; cuk l drk gā

vr% l dYi ys ^ /ofu inlk.k ughal qke; i kfjokjd thou pkfg; A**

Contributory Article (Section in Hindi)

eknd inkFkA dk 0; l u , d l kelftd cjkB
vHkH JhokLro

'kkl dhs dU; k gkbLdny] vyhi gk] Nrji g] ftyk Nrji g] 471001

ilrkouk %nks fojkskh iofrr; k; ekuo thou l sVdjkrh gA l kRod vks rkefl dA l kRod iofrr okyk 0; fDr vkn'kz ukxfjd cuus ds l kFk l kFk nsk dh ixfr ea Hkh l gk; d fl) gkrk gA rkefl d iofrr ds gkoh gks tkus ij ekuo dk iru o fouk'k rks gkrk gh gS jk"V" ds fy, Hkh ?kkrd gkrk gA u'khy inkFkA dk l ou vks ml dh vknr , d l kelftd cjkBz gA e| l ou dh iofrr 'krkfcn; ka i mZ dh gS gekjs /keZ xBfFka ea *l ke* vks *l jk* 'kcnka dk mVyk gk gS tks bl rF; dks iekf.kr djrs gS fd gekjs i mZ eknd inkFkA ds ieh Fk vks bl dk l ou [kys : i ea djrs FkA ml le; Hkh l kaej iku ds fy, cMs cMs l dV eMjk; s Fks rFkk vuud idkj ds l kFkA ds dkj.k thou o /ku dh gkfu vks yHkH Hkh ?kVr gq s gA

fo"k; oLrq %tc dkbZ 0; fDr eknd inkFkA dk ifrfnu fu; fer l ou djrk gS rks ml u'ks dk vknh gks tkrk gS rFkk ml dk ekuf l d vks 'kjhfd l ryu Mxexk tkrk gA Hkkrh; l ekt ea /kuh fu/kZi] cky] o)] L=h iq "k] Nk=] f'kf{kr&vf'kf{kr l Hkh oxka ea u'kk[kgh dh iofrr ikBz tkrh gA u'kk , d 0; l u gS fti ds f'kdats ea l jk fo'o t dMk gk gA eknd n0; vuud idkj ds gkrs gA 'kjk] vOhe] pji] xkt] Hkka] rkmh] dphu] ctmu'kqj] gkbou] rEckdh chMh fl xjv] eFkMhu] iFkMhu] LeB] dush ds i kSks dk j l] nsk vks fonskh 'kjkA Hkkr ea ifro"lz yxHkx 14 [kjc #i; k u'ka ea [kpZ gks jgk gA 60 ifr'kr 'kjk ds dkj.k ikxy gq gA 'kjk ihus okya ea yxHkx 30 ifr'kr QQM ds jks l s xLr gA yxHkx 23 ifr'kr ist ds fodkj eaER; qds dky ea l ek x; A rEckdh l s 10 yk[k 0; fDr ifro"lz ejrs gA /kai ku dk vl j bruk 0; kid gkrk gS fd ifrfnu 200 0; fDr /kai ku djus okya ds l kFk cBus ek= l s ejrs gA xB/dk l ou 13&14 o"lz ds cPka dh eR; qHkh d j l s gks tkrh gA

orEku ea Hkkr ea yxHkx 70&75 yk[k 0; fDr eknd n0; ka ds vH; Lr gA buea Nk=ka dh l ; k yxHkx 30 ifr'kr gA bl h dkj.k Hkkr l fgr ijs fo'o ea u'khy inkFkA dk voSk 0; kjk naxfr l s c<+jgk gA o"lz 1988 ea Hkkr ea , d fDoB/y gkbou idMh xBz FkA vUrjZVh; cktj ea bl dh dher , d vjc #i; s vuEfur dh xBz FkA orEku ea eknd n0; dh rLdjh vks voSk 0; kjk gtkja xpk c<+x; k gA 1980 ds i mZ Hkkr ea gkbou dk u'kk yxHkx ugh ds cjkj Fk fdUr 1990 rd 8 yk[k es vf/kd ykx bl u'ks ds vknh gks pps gA FkA vc bl ds vH; Lrka dh l ; k djkMh ea igp pph gA vejdk ea *ukj dks VI MXI * %Loki u vksf/k; k/2 rFkk vij/k ds l Ecu/kka ij fd; s x; s vuq akku l s fl) gk fd eknd oLrq/ka dk mi ; kx djus okys pkjh l akkjh l jh[ks vij/k vf/kd djrs gA vuud vij/kh gR; k] cykRdkj vkfn ds fy, u'ks dk l gkj yrs gA u'kk djds ekuo 'kku cu tkrk gS ml dh fopkj {kerk [ks tkrh gS ml s iki iq;] mfr&vufr dk Kku ugha jgrkA ml dk ufrd iru rks gkrk gh gS 'kjh o thou dk Hkh fouk'k gks tkrk gA u'kMh viuh l kjh l Eifrr u'ks ea u"V dj Mkyrk gA ?kj ea vkhkHk.k] orZi] l keku vkfn l c /khs /khs cp nrk gS vks u'kk djrk gA ; gkard fd nll jka dh gR; k djds Hkh /ku i klr djuk pgrk gS D; kaid og u'ks ds fcuk ugh jg l drkA bXySM ds XyLVku ds 'kcnks e e| iku l seut; tkr dh bruh gkfu gBz ftruh ; j jksk nHkZk l s Hkh ugha gBz

u'ks ds dkj.k ifjokj ea dyg l s ifjokj dk fouk'k gks tkrk gS fo[kj tkrk gA u'kk 'kjh ds fy, ?ku gA jDr ea 0-03 ifr'kr 'kjk 0; fDr dh dk; Zkerk dks iHkfor djrh gA 0-05 ifr'kr l s 0; fDr mPNqkr gks tkrk gA 0-15 l s 'kjh ea tgj QSy tkrk gA 'kjk dks nqZ/ukvka ds vol j 30 xps vf/kd rFkk eR; qds 16 xps vf/kd 12 l s 20 o"lz vk; q ?kV tkrh gS vkRegR; k dh iofrr <kBz xpk c<+ tkrh gS vkj k/fkd

i dfrrea 45 i fr'kr of) gkrh gSrykd dh i dfr 8 xuk vf/kdA 'kjk I s gkus okyh chekfj; ka dh I ; k Hkh Hk; kog gA

egkRek xkalkh us dgk Fkk ***kjk 'kjh dh vj yidrh /k/kdrh gPZ Hkdh vkj p<h gPZ unh dh vj yi dua I s Hkh T; krk [krjkukd gA Hkdh ; k unh I s rks dpy 'kjh dk uk'k gkrk gS exj 'kjk 'kjh vkj vkrk nksuks dk uk'k drrh gA ; ok oxZ ea u'kk[kkj dh ipyu fi Nys dN n'kda ea cgr c<k gS fo'kSk : i I s Lohyka dky/stka o fo'fo | ky; ka ds Nk=&Nk=k; a Lebl dkdhu] vOhe , oa gkjbu dk u'kk drrs gA ; g u'kk batD'ku I s Hkh fy; k tkrk gA bl u'ks dh yr I s Nw/dkj ikuk cgr dfBu gA vl e; eR; q ds dky ea lek tkrk gA bl idkj ds u'ks cgr [kphys Hkh gS ftl dh i frZ ds fy, ; s Nk= vij/k deka ea yhu gkdj pkyh Mds h] cbl yw tS h 'keukd ?kVukvka ea Hkh fyrl ik; s x; s gA u'kk[kkj ds fuEu dkj.k ftEnkj gA

?kj ,oa ifjokj ea mfr Lug u feyuka rukl vol kn , d dPk dh vf/kdrkA cjkst xkjhl vl j {kk dh HkkoukA vfuf'pr Hkfo"; A usrd vkpj.k eafxjkoVA vk/kfud cuus dh bPNkA u'kk djust okyA dh I xRA vHkri dZvku dh miyf/kA , dkdhiu dh i rhrA fl uskl nijn'ku fonskh pkyka , d bZju/ ds v'yhy pkyka dk i HkkoA I keftd ifjosk i k; Øeka ea uhjrl rk vj ml dk jkst xkj enyd u gkus gA

Hkjr ea e | fu'kSk dkuu gS I kFk gh I fio/kku ds 47 oa vuPNn eajkt; ka dks ; g dgk x; k gS fd os vius {ks= ea e | fu'kSk rFk u'khyh nobZ; ka ij jkd yxk; A 1955 es; kstuk vk; ks us* e | fu'kSk tkp I fevr* dk xBu Hkh fd; k Fkk ftl us bl I anHz ea vud mik; I q; s FkA vud jkt; ka ea i wZ e | fu'kSk ykxw gA m/kj vud jkt; , d s gS ftUgus bl s vk; dk i edk I k/ku ekudj i wZ e | fu'kSk ykxw ugha fd; kA vko'; drk bl ckr dh gS fd bl fo'k; dks dhnz vius vlr xZ ys vj I Hkh jkt; ka ea e | fu'kSk ykxw djA I u-1988 ea gkjbu , oa Lebl tS sik.kyp eknd inkFkA dh jkd ds fy, ykd I Hkh us, d fo'ks d ikfjr fd; k gS ftl ea; fn dkbZ 0; fDr u'khy inkFkA dk 0; ol k; djust vjksi nhl jh ckj nksk ik; k tk; sk rks ml sef dh I tk ds I kFk I kFk ml dh I Ei rRr Hkh tCr dj yh tk; s hA

Lo; d dh I fFkvka us bl fn'kk ea dk; ZvkjEHk dj fn; k gA nsk ea vkt I dMka , d h I fFk, a gS tgka eknd n0; ka dh yr Nw/kuus ds iz kl fd; s tk jgs gA LokLF; , oa ifjokj dY; k.k ea ky; e | iku vj eknd inkFkA ds I ou dh jkdFke ds fy, jk"Vh; Lrj ij vud iz kl djrk gA vlrjkZVh; Lrj ij I a Dr jk"Vh I ak }kj vlrjkZVh; Lokid e.My* dk xBu fd; k x; k gS tks u'kk ds fo:) dk; Zdj jgk gA

mi l gkj % I jdkj dks u'kkclnh dkuu dMkbZ I s ykxw djuk pkfg, A bl I s gkus okys jktLo dh gkfu dh Hkj i kbZ dh fpurk u djd s ijs nsk ea u'kkclnh ykxw dj nsh pkfg, rFk u'khy inkFkA ds 0; ol k; ea fyrl ykxka dks dMk n.M nsus ds iko/kku djuk pkfg, A I keftd I fFkvka vFkHkrodh f'k{kdk/keZ xq vka dh Hkh u'kk[kkj jksus ea i HkkoH Hkdedk gks I drh gA tc I Hkh ykx fey tydj iz kl djs rHkh u'kk[kkj dks nj fd; k tk I drk gS tks I keftd vFk'kku cu dj jg xbZ gA

I q-ko % bu I q-ko ka ij Hkh /; ku nsuk pkfg, A vfrff; ka dk Lokx eknd n0; ka u fd; k tk; A , d 0; ol u NkM+ dj nhl jk 0; ol u u viuk; k tk; A cPka I s u'khy phta u exokbZ tk; A 0; ol u ds fy; s iku el kyk igyk dne gS bl s rdky NkM+fn; k tk; A

XyMLVu us dgk gS **; q] nHkZk] rFk egkejh bu rhuka us feydj euq; tkfr dks bruh gkfu ugha i gpkbZ ftruh vdsyh efnjk uA**

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