Leprosy research has entered into a new paradigm and evidence based science is trending today. This had led to generation of new policies to address the needs of treatment better. WHO redefined Pauci-Bacillary leprosy as one with patches and no nerves with negative slit skin smears making classification easier and bringing a lot more cases into Multibacillary spectrum. Better late than never, better to over diagnose has become real and cautionary. This is a welcome move when annual case detection rates stagnated after 13 years of elimination of the disease and grade 2 disability started to rise. An area of concern is the development of antimicrobial resistance to Rifampicin, albeit in small numbers, which needs to be monitored systematically and persistently.

The year 2018 ushered in with 9 studies being published in peer reviewed journals. The topics varied from molecular biology, transmission dynamics, Women and Leprosy, Quality of life in people affected by Leprosy and Antimicrobial Resistance studies. The case study of Lakhan brings to light that drug resistance, defaulting and comorbidities are a reality and efforts must be taken to identify and treat appropriately. Dr Katoch's journey through the research world of leprosy is a fascinating awe inspiring read that leaves us inspired by his commitment to the cause of leprosy. Dr Sengupta has enlightened us on the vaccines in leprosy. His article will clarify many doubts that one may have concerning vaccines. Research in TLMTI forges ahead with the relevant research topics of the leprosy world. We hope you'll enjoy the newsletter.

Happy reading!

Dr Joydeepa Darlong
Introduction
Between 1970s and 1990s many efforts were made by various researchers in the world in finding out a candidate vaccine against leprosy. During that time the criteria of selecting a candidate vaccine was, that it should be able to convert a lepromin negative individual to lepromin positive and it should also be able to convert a lepromin negative patient to lepromin positive along with up-gradation of cell mediated immunity (CMI) to a state that a clinical lepromatous leprosy upgrades to borderline leprosy towards BT. Further, these candidate vaccines should also be able to inhibit the growth of *M. leprae* in the mouse foot pad. Considering the above criteria following us were initially skeptical about success of this intermittent regimens, history showed that we were not totally right – drop in numbers of leprosy cases by more than 95% and near elimination of drug resistance should be cherished by one and all. However, in this heap of success we missed the opportunity to improve by focusing on modifying the action based on evidence. Detection of presence of viable bacilli in a section of cases by animal, in-vitro microbiological and molecular methods was disregarded. Better regimens and better strategies were proposed by many, however, considered insignificant and trivial by those whose views were considered dominant. Ultimately, we reached the magic milestone of elimination of leprosy as a public health problem in 2005 and integration of services with general health services. While decision appeared logical and cost effective, next ten years of stagnation of numbers and rise in deformities showed that optimism shown at the time of integration was not backed by adequate ground work. Smears were abandoned long back, introduction of molecular methods developed and available for more than two decades did not get support. Missing multibacillary cases where the skin lesions are not prominent is due to tubular vision of largely restricting the strategy to counting of lesions. Advances in genomics, immunology and vaccinology including indigenously developed ones were not used in time to make a difference to people. Technology support for diagnosis, monitoring, assessment of nerve damage and other facets of disease management would have possibly reduced the consequences of disease significantly. Public health measures based on locally generated evidence and with due respect to socio-behavioural research would have achieved better research. Studies carried out at national level on the directions of Parliamentary Committee showed that competence and commitment in our government system was intact and it was also truthful about numbers. Rejuvenation of programme specially during the last 3-4 years, focusing on active case detection and managements already showing excellent results. Strengthening and institutionalizing of drug resistance surveillance will be a good deterrent for future. Besides international agencies, ICMR has continued with support to leprosy research all through last 20 years. DBT, DST and others have also supported some projects. There has been a clear decline in the level of interest and output from governmental/ autonomous under govt institutions. After care services are grossly inadequate and so is teaching relevant to diagnose early and effectively. Fortunately, network of TLM, LEPRA and some institutions/ projects supported by ALM, Bombay Leprosy Project (BLP), GRECALTES, FMR and some others supported by ILEP agencies have survived through this churning and have are continuing to produce good quality science. Currently, nearly two third of research output from these non-governmental institutions and I am happy to compliment them for the same. I cherish my long association with TLM Research Programmes. I value my association / working with BPHRC &LEPRA, DF, GLRA, BLP, FMR and others. I may have missed mentioning some important contributors (apologies for lapses, if any ). Clearly last four decades have many lessons for all of us, most negative examples show tendency to ignore the evidence and act in time. We are presently in a good phase. We hope that this good spell continues at all levels and we succeed in achieving a leprosy free India and world in another decade.

Implementation of *Mycobacterium indicus pranii* (MIP) vaccine and Rifampicin chemoprophylaxis in contacts of leprosy cases under the NLEP

**Introduction**
Between 1970s and 1990s many efforts were made by various researchers in the world in finding out a candidate vaccine against leprosy. During that time the criteria of selecting a candidate vaccine was, that it should be able to convert a lepromin negative individual to lepromin positive and it should also be able to convert a lepromin negative patient to lepromin positive along with up-gradation of cell mediated immunity (CMI) to a state that a clinical lepromatous leprosy upgrades to borderline leprosy towards BT. Further, these candidate vaccines should also be able to inhibit the growth of *M. leprae* in the mouse foot pad. Considering the above criteria following candidate vaccines were reported by various groups in the world. These were *M. leprae*, *M. leprae* + BCG, BCG, ICRC, *M. w* (now *M. indicus pranii*) and *M. vaccae*.

With BCG + *M. leprae* trial there was no evidence in the first 5 years of follow-up that BCG plus *M leprae* offered substantially better protection against leprosy than does BCG alone (Convit et al. Lancet 1992; Feb 22, 339: 446-50). Although these trials were conducted in small number of people, a population based large randomised controlled trial was conducted in Malawi by Karonga Control Trial Group in 1996 where BCG was found to protect 50% protection to leprosy and addition of *M. leprae* to it
had no additional effect. However, 2 doses of BCG provided better protection than single BCG (Karonga Prevention Trial Group. Lancet 1996; 348:17-24).

Later, many of these candidate vaccines were put into trial along with both ICRC and MIP (Mw) in India at Avadi, Chennai by Gupte et al (1996) in 2,16,000 population (Comparative leprosy vaccine trial in South India. Indian J Lepr 1998; 70: 369-88). This was a controlled, double blind, randomized, prophylactic leprosy vaccine trial conducted in South India. Four vaccines, viz BCG, BCG+ killed M. leprae, M. w (M. indicus pranii) and ICRC were studied in this trial in comparison with normal saline placebo. BCG+ killed M. leprae provided 64% protection (CI 50.4-73.9), ICRC provided 65.5% protection (CI 48.0-77.0), M.w gave 25.7% protection (CI 1.9-43.8) and BCG gave 34.1% protection (CI 13.5-49.8). Later, another double blind randomised field trial was conducted using Mw vaccine at Kanpur Dehat, Uttar Pradesh by Sharma et al (2005) where 24,060 people either received vaccine or placebo. The protective efficacy was found to be 68%, 60% and 28% at the end of the first, second and third surveys, respectively. The effect of vaccine is sustained for a period of about 7-8 years, following which there is a need to provide a booster vaccination for the sustained protection (Sharma et al. Leprosy Review 2005; 76 (2):127-43).

Considering the above it has been decided to undertake a study in a project mode [Programmatic Implementation and Comparison of MIP Vaccine Immunoprophylaxis and Rifampicin Chemoprophylaxis under the National Leprosy Eradication Programme (NLEP)] in high endemic settings using M. indicus pranii (MIP) and Rifampicin chemoprophylaxis under the programme for prophylaxis against leprosy in contacts.

Objectives are as below:

Primary objectives:

a) To assess the impact of implementing MIP for immunoprophylaxis in contacts of leprosy cases under programmatic settings and compare with rifampicin chemoprophylaxis.

b) To assess the impact of implementing Rifampicin chemoprophylaxis in contacts of leprosy cases under programmatic settings and compare with MIP immunoprophylaxis.

c) To assess the impact of implementing MIP and Rifampicin concomitantly for prophylaxis in contacts of leprosy cases under programmatic settings and compare with MIP and Rifampicin prophylaxis when given individually.

Secondary objectives:

a) To assess the reduction in Grade II disability cases (number of new cases of disability per million population), reduction in prevalence of leprosy as well as reactions on implementing the use of MIP and rifampicin for prophylaxis under programmatic settings.

The Unit of implementation will be a District.

To enable comparisons all the districts will be chosen from one state. Two states have been chosen for the study – Gujarat and Bihar. In Gujarat all the four arms will be taken up. One arm will be taken up in each one of the four districts – Narmada, Tapi, Navsari, and Bharuch. In Bihar only two arms will be taken up, one each in the two districts – Banka and Jamui. In all the districts apart from routine implementation of NLEP the interventions will be introduced detailed as under:

1. In Gujarat
   a. In Narmada district MIP prophylaxis only will be given;
   b. In Tapi district Rifampicin prophylaxis only will be given;
   c. In Navsari district prophylaxis with both MIP and Rifampicin will be given;
   d. In Bharuch district no intervention will be done and will be the control district.

2. In Bihar
   a. In Banka district MIP prophylaxis only will be given
   b. In Jamui district no intervention will be done and will be the control district.

All the above districts in each of the states are adjacent to each other and have similar profile in terms of administrative set up, geographical conditions, economic status, social aspects, and leprosy disease burden. The criteria for choosing the above districts is primarily high prevalence rates and high annual new case detection rates being reported under the National Leprosy Eradication Programme (NLEP) i.e. high endemicity for leprosy.

The study population is the entire general population of all study sites. All diagnosed leprosy patients in each of the above districts and their contacts fulfilling inclusion and exclusion criteria will be included for the study. For the purposes of the proposed intervention herewith, the following contacts of leprosy patients will be taken up for prophylactic vaccination:

1. House hold contacts – all healthy contacts living under one roof as that of the patient. This will also include any healthy visiting relative who has stayed for more than one month within the past one year and residing in the selected intervention areas.
2. Close Contacts – those contacts which are identified by a leprosy case with whom he works/interacts closely like a truck driver and cleaner, Riksha puller living in common dormitory with other colleagues or a night shelter etc. Working definition of a close contact, will be a contact(s) with whom the index case is in contact for at least 4-6 hours a day for 4-6 weeks.

3. All contacts will be vaccinated as per the dosage schedule used in the study by Sharma et al (2005). Each contact will be vaccinated at 0 and 6 months. At 0 months a dosage of 1 × 109 heat killed bacilli (Mw) in normal saline will be given. Since 0.1 ml of the vaccine contains 0.5 × 109 heat killed bacilli hence each dose will be administered by giving 0.1 ml of vaccine at two different sites concurrently on the same day. At 6 months a dosage of 0.5 × 109 will be given. The vaccine will be given intradermal on both the arms at the point of insertion of the deltoid. ‘0’ day will coincide with initiation of MDT as far as possible. A booster dose containing a dosage of 0.5 × 109 will be given at 5 years.

4. As regards Rifampicin, a single dose of Rifampicin will be administered to the contacts of leprosy patients under supervision.

5. The proposed project aims to primarily assess the impact of implementation of MIP as an immuno-prophylactic agent in contacts of leprosy cases; the impact of the concomitant use of Rifampicin and MIP vaccine for prophylaxis in contacts of leprosy patients and the impact of using Rifampicin alone for prophylaxis in contacts of leprosy patients in high endemic pockets of the disease and draw comparisons amongst the three intervention arms and with control arm.

6. The project intends to study the long term impact of these interventions in reducing the Grade II disability (G2D) and prevalence of leprosy in the community. In view of the various epidemiological aspects of leprosy such as long incubation period, long treatment schedule, unknown mechanisms of transmission, it may not be possible to measure impact on the prevalence and the incidence of the disease in a span of three years. However, the project will study the parameters of ‘prevalence of pediatric cases’, disability in new cases, incidence of the disease in the contacts vaccinated with MIP, incidence of reactions and deformities etc. and use mathematical modelling to have early learnings on the impact of the interventions. Results will also be stratified as per age, sex and other determinants to understand any differential patterns in the effect of these interventions. Further annual prevalence surveys would be done in each of the intervention districts.

7. Further extensions of the project beyond three years could be considered based on the results obtained through the above measures. It is expected that an effect on the prevalence initially and incidence later could be observed after 4-5 years of continuous interventions.

Events: Till date 3 Meetings were conducted by ICMR jointly between ICMR and Directorate of Health Services and NLR representatives. These were followed up with workshops for development Manuals and drawing of logistics. The vaccination will be done under the supervision of National Immunization Programme by the DGHS. The data obtained will be entered in a soft ware which is being developed by ICMR-WHO. Base line survey and surveys after intervention will be done by National Institute of Medical Statistics (ICMR). If any of the arms show significant protective efficacy and reduction in transmission of leprosy, it will be then implemented throughout the country.

Basic informations on vaccine & its mechanism of action
Commercial Name- IMMUVAC (IMMUNOMODULATOR INJECTION (Heat killed Mw))

Manufactured by-Cadilla Pharma India
- MIP (Mycobacterium indicus pranii) is heat killed vaccine, previously Known as Mycobacterium W.
- MIP is a rapidly growing non-pathogenic bacterium.
- It elicits potent cell mediated immune response when administered intradermally.
- Cell mediated immune response is designated as the Th1 type, Interferon Gamma & Interleukin - 2 are signature cytokines associated with Th1 response.
- MIP shares antigens with M. leprae as well as M. tuberculosis.
- In experimental models it is found to induce lympho-proliferative response. The lympho-proliferative response induced by MIP is the most potent of all known immune modulators.
- Administration of MIP is also associated with release of Th1 type cytokines like Interferon Gamma and Interleukin - 2.
- Th1 immune responses are associated with protection from diseases like cancer, HIV, Tuberculosis, and Leprosy etc. Improving Th1 response in such conditions is associated with improved outcomes.
- The large scale field trials conducted at Ghatampur dehat, vKanpur suggested that when the contacts were given vaccine the protective efficacy was 68.6% till 4 years and 59% at 8 years.(Leprosy Review 2005)
The 20th International Leprosy Congress
10th to 13th September, 2019, Manila, Philippines

After “Hidden Challenges” in Brussels in 2013 and “Unfinished Business” in China in 2016, the 20th International Leprosy Congress definitely gives us the opportunity to turn to future challenges with ambition and realism. After discussions with the Philippines authorities, the International Leprosy Association (ILA) is pleased to announce the organization of the upcoming International Leprosy Congress from 10th to 13th September, 2019 in Manila, Philippines.

Since the introduction of effective multi-drug therapy (MDT) some 30 years ago, the prevalence rate of leprosy has been reduced by 95%. In contrast, the number of people reported with newly diagnosed leprosy has consistently remained above 200,000 per year over the past decade. Yet new scientific advances and strategic approaches have brought the vision of “zero leprosy” into focus. They have created a sense of urgency to accelerate progress towards this vision and have clarified the need to work collaboratively in innovative ways. The World Health Organization Global Leprosy Strategy 2016–2020 now includes in its vision statement “zero transmission of leprosy infection”.

There is no doubt that the global picture of leprosy is different than it was 30 years ago. In this new context, innovative approaches and initiatives are necessary for truly stopping leprosy transmission, preventing disability, and promoting inclusion.

The 20th International Leprosy Congress is a privileged opportunity for scientists, researchers, health staff, partners and individuals affected by leprosy to interact, discuss and share experiences in a variety of fields.

Taking into account these different elements, this Congress, resolutely turned towards “Future Challenges”, has as its main objectives to:

- Review progress made in implementing the 2016–2010 WHO strategic plan since the 19th ILC in China
- Foster a global partnership to stop the transmission of leprosy.

This partnership is meant to be inclusive in order to pool all resources, all opportunities and to achieve the ambitious goal of stopping the transmission of leprosy.

Full details of the congress will be provided later.

Source: Lepra

Dr. Roch Christian Johnson,
President, International Leprosy Association
Lakhan, 19 yr old boy, lives in a slum with his mother. He visited a TLM hospital with a BI of 2.33+. He was on Antituberculous therapy for Pulmonary TB at that time. Physio examination showed absent sensation on both palms and soles with paralysis of ulnar hand and tender multiple peripheral nerves. 2 years ago, he was diagnosed leprosy with BI of 3.66+. He took multidrug therapy (MDT) for around six months and then stopped. He didn’t know that discontinuation could lead to complications. Drug resistance was tested and resistance to rifampicin and dapsone was found. This result was shared with his clinician and appropriate treatment was instituted. With the expert care at the hospital, Lakhan is on the path to recovery.

Clinical Microbiology and Infection Accepted 15 Feb, 2018

Antimicrobial resistance in leprosy: results of the first prospective open survey conducted by a WHO surveillance network for the period 2009-2015.


ABSTRACT

Objectives: antimicrobial resistance (AMR) is a priority for surveillance in bacterial infections. For leprosy, AMR could not be assessed so far since Mycobacterium leprae does not grow in vitro. We aim to obtain AMR data using molecular detection of resistance genes and to conduct a prospective open survey of resistance to antileprosy drugs in endemic countries through a WHO surveillance network.

Results: Among 1932 (1143 relapse and 789 new) cases studied, 154 (8.0%) M. leprae strains were found with mutations conferring resistance showing 182 resistance traits (74 for rifampicin, 87 for dapsone, and 21 for ofloxacin). Twenty cases showed rifampicin and dapsone resistance, four showed ofloxacin and dapsone resistance, but no cases were resistant to rifampicin and ofloxacin. Rifampicin resistance was observed among relapses (58/1143, 5.1%) and new cases (16/789, 2.0 %) in twelve countries. India, Brazil and Colombia reported more than five rifampicin-resistant cases.

Conclusions: This is the first study reporting global data on AMR in leprosy. Rifampicin resistance emerged stressing the expansion of surveillance programs. This is also a call for vigilance on the global use of antimicrobial agents, since ofloxacin resistance probably developed in relation to the general intake of antibiotics for other infections since it is not part of the multidrug combination to treat leprosy.

Infection and Drug Resistance 2018: 11 169–175

Enriched whole genome sequencing identified compensatory mutations in the RNA polymerase gene of rifampicin-resistant Mycobacterium leprae strains

Lavania M, Singh I, Turankar RP, Gupta AK, Ahuja M, Pathak V, Sengupta U

ABSTRACT: Despite more than three decades of multidrug therapy (MDT), leprosy remains a major public health issue in several endemic countries, including India. The emergence of drug resistance in Mycobacterium leprae (M. leprae) is a cause of concern and poses a threat to the leprosy-control program, which might ultimately dampen the achievement of the
elimination program of the country. Rifampicin resistance in clinical strains of M. leprae are supposed to arise from harboring bacterial strains with mutations in the 81-bp rifampicin resistance determining region (RRDR) of the rpoB gene. However, complete dynamics of rifampicin resistance are not explained only by this mutation in leprosy strains. To understand the role of other compensatory mutations and transmission dynamics of drug-resistant leprosy, a genome-wide sequencing of 11 M. leprae strains – comprising five rifampicin-resistant strains, five sensitive strains, and one reference strain – was done in this study. We observed the presence of compensatory mutations in two rifampicin-resistant strains in rpoC and mmpL7 genes, along with rpoB, that may additionally be responsible for conferring resistance in those strains. Our findings support the role for compensatory mutation(s) in RNA polymerase gene(s), resulting in rifampicin resistance in relapsed leprosy patients.


Quality of life of people affected with leprosy disability living in Purulia, West Bengal.

Govindharaj P, Srinivasan S, Darlong J.

ABSTRACT
Objective: This study aimed to assess the quality of life of people affected with leprosy disability living in Purulia district of West Bengal. Methods: A cross-sectional study was conducted among 50 people affected with disability associated with leprosy and an equal number of people without disability aged 18 years and above who were reported at Purulia Leprosy Mission Hospital, West Bengal. The World Health Organization quality of life (WHOQOL-BREF) Scale was used to measure quality of life. The scale had four domains; physical health, psychological health, social relationship and environmental health. Results: Among the total respondents, 51% were male, 60% were between 20 - 40 years of age, 49% were literate, 39 were house wives and 75% of family income was up to 5000 thousand rupees. Disease duration was 1 to 3 yrs in 37%, 3 to 5 years in 34% and more than 5 years in 29%. There was a highly significant difference seen among the leprosy affected persons with disability and without disability in all the four domains. The persons with disability had lower quality of life than the persons without disability. Conclusion: The study observed that elderly women, those who have the multibacillary form of the disease and Grade 2 deformities faced more restriction as regards social participation. A higher level of participation restriction was found among participants whose neighbours and community members knew of their disease condition. A special effort is needed to reach poor and marginalized leprosy-affected women and it will require the promotion of women's empowerment to improve their level of social participation.

Indian J Dermatol Venereol Leprol. 2018; 84(2):131-136.

Elimination of leprosy in India: An analysis.

Sengupta U.

ABSTRACT
India attained the elimination figure of less than 1 case of leprosy per 10,000 people during December 2005. Despite this, India still accounts for the largest number of new leprosy cases in the world, maintaining more than 50 per cent of the leprosy burden of the world, notwithstanding over three decades of use of multidrug therapy. The present review analyzes the process of execution of the elimination program, identifies any lacunae therein and presents corrective measures that could be taken up for elimination of the disease from the country.

Lepr Rev (2018) 89, 56 – 64

Factors associated with social participation of women affected with leprosy reporting at a referral centre in Chhattisgarh

Senthil kumar Ramasamy, Pitchaimani Govindharaj, Suganya Panneerselvam & Archana Kumar

Summary
Objective: To assess the level of social participation and to study the factors associated with the social participation of leprosy-affected women after release from multi-drug therapy.

Results: Of the 113 participants, 85 (75%) women showed no restriction in social participation while 28 (25%) women did have some restriction. There were statistically significant associations between social participation restriction and age, disease type, and disability grade, and also in relation to the knowledge or lack of knowledge about the diagnosis of leprosy amongst neighbours and community members.

Conclusion: This study observed that elderly women, those who have the multibacillary form of the disease and Grade 2 deformities faced more restriction as regards social participation. A higher level of participation restriction was found among participants whose neighbours and community members knew of their disease condition. A special effort is needed to reach poor and marginalized leprosy-affected women and it will require the promotion of women's empowerment to improve their level of social participation.
Autoimmunity to tropomyosin specific peptides induced by Mycobacterium leprae in leprosy patients: Identification of mimicking proteins

Singh I, Yadav AR, Mohanty KK, Katoh K, Sharma P, Pathak VK, Bisht D, Gupta UD, Sengupta U

Background: It has been shown earlier that there is a rise in the levels of autoantibodies and T cell response to cytoskeletal proteins in leprosy. Our group recently demonstrated a rise in both T and B cell responses to keratin and myelin basic protein in all types of leprosy patients and their associations in type 1 reaction (T1R) group of leprosy.

Objectives: In this study, we investigated the association of levels of autoantibodies and lymphoproliferation against myosin in leprosy patients across the spectrum and tried to find out the mimicking proteins or epitopes between host protein and protein/s of Mycobacterium leprae.

Methodology: One hundred and sixty-nine leprosy patients and 55 healthy controls (HC) were enrolled in the present study. Levels of anti-myosin antibodies and T-cell responses against myosin were measured by ELISA and lymphoproliferation assay, respectively. Using 2-D gel electrophoresis, western blot and MALDI-TOF/TOF antibody-reactive spots were identified. Three-dimensional structure of mimicking proteins was modelled by online server. B cell epitopes of the proteins were predicted by BCPREDS server 1.0 followed by identification of mimicking epitopes. Mice of inbred BALB/c strain were hyperimmunized with M. leprae soluble antigen (MLSA) and splenocytes and lymph node cells of these animals were adoptively transferred to naïve mice.

Results: Highest level of anti-myosin antibodies was noted in sera of T1R leprosy patients. We observed significantly higher levels of lymphoproliferative response (p < 0.05) with myosin in all types of leprosy patients compared to HC. Further, hyperimmunization of inbred BALB/c strain were hyperimmunized with M. leprae soluble antigen (MLSA) and splenocytes and lymph node cells of these animals were adoptively transferred to naïve mice.

Conclusions: These data suggest that these mimicking proteins tropomyosin and ATP-dependent Clp protease ATP-binding subunit of M. leprae or more precisely mimicking epitopes (4 B cell epitopes) might be responsible for extensive tissue damage during type 1 reaction in leprosy.

Virtual Screening of Interaction of rpoB gene to Secondary-Line Anti-Leprosy Drugs for Rifampicin Resistant M. leprae using In-Silico Approach

Lavania M, Singh I, Turankar RP, Sengupta U

ABSTRACT

Leprosy, caused by the pathogen Mycobacterium leprae, is still a public health threat in some parts of the world. It has been recently noted that several M. leprae isolates have developed secondary resistance to WHO recommended MDT especially to its bactericidal drug, Rifampicin. In this work, in silico molecular docking was performed using Molegro virtual Docker docking server, in order to find the binding interaction and other properties of fluoroquinolones and minocycline which are used as secondary line drugs for M. leprae rpoB gene, resistant to Rifampicin and could be of great help in selection of secondary line of anti-leprosy drugs using rpoB coded protein as a potential target.

Molecular detection of multidrug-resistant Mycobacterium leprae from Indian leprosy patients


ABSTRACT

Objectives: The emergence of multidrug-resistant (MDR) organisms for any infectious disease is a public health concern. Global efforts to control leprosy by intensive chemotherapy have led to a significant decrease in the number of registered patients. Currently recommended control measures for treating leprosy with multidrug therapy (MDT) were designed to prevent the spread of dapsone-resistant Mycobacterium leprae strains. Here we report the identification of MDR M. leprae from relapse leprosy patients from endemic regions in India.