

New 'yeti'-variant of visceral leishmaniasis parasite discovered

ITM researchers and their Nepalese partners recently discovered a new variant of the visceral leishmaniasis parasite in the Indian subcontinent.

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Dit is de omschrijving

Researchers of the Institute of Tropical Medicine (ITM) in Antwerp and the BP Koirala Institute of Health Sciences (BPKIHS) recently discovered a new variant of the visceral leishmaniasis parasite in the Indian subcontinent. In the last edition of the journal *Infection genetics & Evolution*, they report their discovery -in remote Nepalese highlands- of a variant very different from the parasites encountered so far in the subcontinent (1). These parasites, labeled by the scientific code ISC1, were nick-named by the scientists as the 'Yeti'-variants, because of their geographical origin. Visceral leishmaniasis or 'kala-azar' is a disease caused by the parasite *Leishmania* and killing 40,000 each year, worldwide. The Indian subcontinent is one of the hotspots of the disease, with frequent outbreaks. In 2005, a regional control program has been launched aiming to eliminate the disease; the program is running well and the number of cases and fatalities are significantly decreasing. However, this could be challenged by new variants of *Leishmania* appearing in the region.

Visceral leishmaniasis caused by the parasite *Leishmania* has been a major health concern in India, Nepal and Bangladesh, since the first reported outbreaks. The disease has reached epidemic proportions several times over the past few decades and the governments of the 3 countries have done a tremendous effort to combat the disease, achieving promising successes. The so-called kala-azar elimination programme is based on diagnosis and treatment of patients as well as on insecticide spraying against the insects transmitting the parasite.

Scientists of ITM Antwerp, BPKIHS and Banaras Hindu University have been studying *Leishmania* of the region since a decade and they sequenced the genome of hundreds of strains. The vast majority of these were encountered in the Gangetic lowlands, where the disease is endemic and they are genetically rather similar because of their recent ancestry, around 1850. Transmission of *Leishmania* in remote Nepalese hilly districts was only discovered recently (2) and ITM scientists discovered that albeit belonging to the same species, the parasites were very different from a genome point of view. Prof. Jean-Claude Dujardin, head of the department of Biomedical Sciences at ITM and senior author of the paper says: "*Within our lab, scientists rapidly called this new variant, 'Yeti', due to its geographical origin, but also after the name of Tintin's companion in a famous Belgian comic. Our later work showed that these Yeti-variants were spreading in the region (3)*"

In the new paper published by *Infection, Genetics and Evolution*, the scientists have undertaken a deeper molecular characterization of these Yeti-variants and discovered that they differed from parasites of the lowlands in several aspects. Dr. Bart Cuypers, first author of the paper says: "*From a genomic and biochemical point of view, the two types of parasites are like day and night. They come from very different ancestors and they behave very differently, among others in terms of response to drugs and virulence*".

Prof. Dujardin concludes: "*It is essential to contextualize this discovery in the currently running elimination programme and to ask critical questions. For instance, will these Yeti-variants be equally recognized by diagnostic tools used in the programme? Will they respond equally to treatment than other parasites? Will they infect humans only or also animals? Will they ultimately replace the existing parasites? Such questions must be urgently answered, and our colleagues of the Indian subcontinent can count on us to further collaborate with them for further endeavor.*"

References

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Link to the paper

<https://www.sciencedirect.com/science/article/pii/S1567134818302004>