

**Title:**

**Genome characterization of *bla*<sub>NDM-1</sub> harbouring emerging pathogen *Acinetobacter lactuca* strains from immunocompromised patients**

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**Abstract:**

Clinical isolates of *Acinetobacter lactuca* having *bla*<sub>NDM-1</sub> gene were isolated from immunocompromised patients admitted to a tertiary-care hospital in India. The present study used multiple methods to identify, analyze and characterize the *A. lactuca* strains to differentiate them from other *Acinetobacter* species. Biolog automated phenotypic method and matrix-assisted laser desorption-ionization time-of-flight spectrometry (MALDI-TOF) employed incorrectly identified *A. lactuca* as *Acinetobacter soli* and *A. pittii* respectively. However, 16S rDNA sequencing was able to identify the *A. lactuca* unambiguously. Phenotypic variations among strains were analyzed by checking their resistance and structural properties. Whole genome sequencing (WGS) was performed to decipher the pan and accessory genome components of this bacterium. Further, the WGS of *A. lactuca* revealed the presence of a plethora of different resistance and virulence genes in their genomes, which indicates that this species is capable of causing resistant infections. Genome analysis revealed the presence of different classes of  $\beta$ -lactamases (*bla*<sub>NDM-1</sub>, *bla*<sub>ADC-25</sub> & *bla*<sub>OXA-270</sub>), which is

likely aiding this bacterium to develop multi-drug resistance. This study reports the isolation and characterization of *A. lactuca* which is rare in an Indian clinical setup.

### **Biography of presenting author**

- ✚ The Presenting Author's main research area is on studying of PathoGenomics, Virulence and Persistence of *Acinetobacter baumannii* and molecular evolution of resistance in *A. baumannii* and he has expertise in molecular biology, medical microbiology, genomics and proteomics, which is evident through his publications [https://scholar.google.com/citations?user=\\_AeOB6oAAAAJ&hl=en](https://scholar.google.com/citations?user=_AeOB6oAAAAJ&hl=en).
- ✚ He is a recipient many Young Scientist awards (DST, FEMS, INCLEN) and UGC research awardee and have project funding from different agencies of government of India (DST, UGC, AERB, SERB, and ICMR)
- ✚ The PI has published more than 52 research articles in reputed journals with the cumulative impact factor **173.3**, the ***h*-index of 22**, ***i*-10 index of 29** and they have received **1621** citations so far. This PI has been working on *A. baumannii* since past 23 years, having maximum publications in the area of drug resistant microbes of clinical relevance.