INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study	:	**Ph.D.**

Thesis Title:
"Studies on dihydrolipoamide dehydrogenase of *Leishmania donovani* and itsbiochemical functions".

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SHORT ABSTRACT

Our whole work provides clear evidence about the existence of two different variants of *Ld*DLDH enzyme which has a difference in catalytic activity. *Ld*DLDH_Variant2 showed high physiological catalytic activity compare to *Ld*DLDH_Variant1 during biochemical studies. These enzymes belong to the flavo group that was confirmed by estimation of FAD (flavo compound) cofactor by HPLC analysis. Other than a physiological activity such as the conversion of DLD into LA (natural substrate), it also performs a function like diaphorases. *Ld*DLDH enzyme has also the ability to transfer an electron to any electro accepting compound which forms radical. *Ld*DLDH_Variant1 showed greater diaphorase activity upon *Ld*LDH_Variant2. In the search of the reason behind less activity of *Ld*DLDH _Variant1, mutational studies were performed. Out of five mutations (C15T, C38G, A48I, D49G, and A54I), Cys-15 may be one of the members of disulfide bridge former. In flavo group of enzyme, disulfide bridge at the active site utilized in the catalytic process. All other mutated amino acids including Cys-15 having a role in the catalytic activity which was also confirmed by fluorescence study. GFP-based localization study of *Ld*DLDH variants revealed that *Ld*DLDH_Variant1 present in more than one compartment includes the nucleus, kinetoplast, and mitochondria whereas another variant localizes in cytoplasmic face of the plasma membrane.