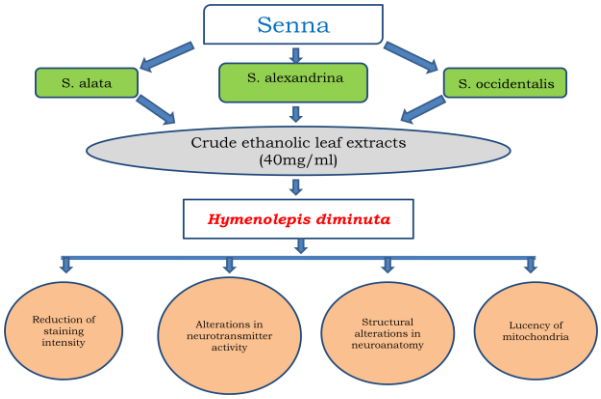
# *Senna* plant leaf extracts: Its effect on the nervous system, neurotransmitters and mitochondria of *Hymenolepis diminuta*:

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Abstract

**Statement of the problem:** Helminthiasis is a major infectious disease caused by parasitic helminths and has become a global health problem thus affecting human population. These helminths have also become resistant to available synthetic drugs which lead to a search of natural medicines. Three species of *Senna* plants were reported to cause structural and biochemical alterations against the cestode parasite *Hymenolepis diminuta*. Since no studies were made on the effect of these plant extracts on neuro-anatomy structure or co-ordination and energy unit of the parasites, it is thus important to observe if this plant has got any alteration in the structure as these poses important aspects for survival of the parasites. **Methodology and Theoretical Orientation:** Ethanolic leaf extracts (40mg/ml) of three species of *Senna* plants were tested against *Hymenolepis diminuta*. Neurotransmitter activity was studied through its enzyme acetylcholinesterase assay. Immunohistochemical study was done as a supporting experiment for identifying the neuroanatomy using anti Serotonin antibody from rabbit as primary antibody and fluoresceneisothiocyanate conjugated swine anti rabbit IgG as secondary antibody. Morphology of mitochondria was studied through transmission electron microscopic (TEM) study after fixing the paralysed worms in 3% gluteraldehyde. **Findings:** Both histochemical and immunohistochemical studies showed changes in the intensity of the stain in treated parasites from control. TEM studies revealed disruption in the outer membrane of the mitochondria as well as its cristae. **Conclusion and Significance:** *Senna* plant extracts showed to have an influence on the neural structure and coordination as well as on structure of mitochondria of the parasite and can be regarded as a future positive potent anthelmintic drug therapy.

Image:




Recent Publications:

1. WHO. Research priorities for helminths infections; 2012

2. Abdel-Ghaffar F, Semmler M, Al-Rasheid KAS, Strassen B, Fischer K, Aksu G, Klimpel S, Mehlhorn H (2011) The effects of different plant extracts on intestinal cestodes and on trematodes. Parasitology Research 108:979-984.

3. Kundu S, Roy S, Lyndem LM (2012) Cassia alata L: potential role as anthelmintic agent against*Hymenolepisdiminuta*. Parasitology Research DOI 10.1007/s00436-012-2950-6.

4. Kundu S, Roy S, Nandi S, Ukil B, Lyndem LM (2015) *In vitro* anthelmintic effects of *Senna occidentalis*(l.) Link (leguminosae) on rat tapeworm *Hymenolepis diminuta*. International Journal of Pharmacy and Pharmaceutical Sciences 7(6):268-271.

5. Kundu S, Roy S, Nandi S, Ukil B, Lyndem LM (2016) *Senna alexandrina* Mill. Induced ultrastructural changes on *Hymenolepis diminuta*. Journal of Parasitic Diseases DOI: 10.1007/s12639-016-0768-3.

6. Kemmerling U, Cabrera G, Campos EO, Inestrosa NC, Galanti N (2006) Localization,

Specific Activity, and Molecular Forms of Acetylcholinesterase in Developmental Stages of the Cestode Mesocestoides corti. Journal of Cellular Physiology 206(2): 503-509.



## Biography:

Bidisha Ukil is pursuing her PhD under the supervision of Dr. Larisha M. Lyndem in the Department of Zoology, Visva-Bharati University, Santiniketan, India. She has been registered for PhD programme since 2013 and since then been working on the nervous system and energy metabolism of *Hymenolepis diminuta*, a cestode parasite that affects rodent hosts but is a silent threat to human population as well. She has made this approach as a cestode parasite's survival solely depends on its nerve-muscular co-ordination that monitors its migration and attachment within host's body. Antagonistic effects of the leaf extracts of three species of Senna plants may interrupt such activities of the parasite and thus may lead to their expulsion from the host body. Ms. Ukil has experienced and well trained in raising the parasitic model in rodents and maintain its life cycle in the laboratory. She has been exposed to many fields of parasitology through her participation in conferences nationally.

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Notes/Comments: I would like to participate in this seminar as this would be my first international exposure where I can exchange research ideas and can explore the field of Parasitology and can thus enhance my knowledge in this area. I shall be grateful if I am allowed to participate in this conference.