National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Bile transport in GI pathologies: Altered motility patterns as facilitator of duodenogastric reflux and possibly, occurrence of gastric carcinoma over a long-term persistence of reflux
Speaker	: Prof. Ravi Kant Avvari (1201377)
Supervisor	: Dr. Nivedita Patra
Venue	: BM Department Seminar Room
Date and Time	: 28 May 2025 (03:00 PM)
Abstract	: Impaired motility has been indicated in the causation of the reflux such as duodenogastric reflux (DGR), where bile from the duodenum refluxes into the stomach, leading to gastric mucosal injury, inflammation, and dysregulation of normal gastric-duodenal function. This phenomenon is often seen to be normal in subject, where the reflux occurrence is normal and does not lead to any pathological symptoms, however, in conditions where the reflux volumes are increased owing to unknown reasons; there is increased risk for pathology. Reflux brings along with the duodenal contents, the bile salts which are detrimental for the mucosal tissue lining gastric and duodenal segments, leading to ulceration. Over time, persistent DGR can contribute to gastric carcinogenesis, potentially increasing the risk of gastric cancer. Regulation of reflux is dynamic and requires the coordination of the antral, pyloric and duodenal motility to regulation of flow across the stomach and the duodenum. By considering the bile salt components as reactive species, a reaction-diffusion transport model is developed to assess the role of peristalsis in the bile salt metabolism and transit. The lubrication approximation of the flow is developed by considering power-law model of the fluid. The transport of the bile salt and the derivatives was quantified for various duodenal motility patterns by considering the following peristalsis parameters – elementary contraction (APW, RPW, SW), wavelength, velocity and occlusion of the wave, and frequency of the contraction. Results of the bile transport are presented for the duodenal peristalsis and its impact on the kinetics leading to the probable pathology of gastric carcinoma Keywords: Bile salts, Bile Reflux; Duodenogastric Reflux; Peristalsis; Small Intestinal Motility; Lubrication theory; Fluid Dynamics. ALL ARE CORDIALLY INVITED