

Biomagnetic method: An approach to gastrointestinal research and diagnostics

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Alternating Current Biosusceptometer (ACB) employs a pickup coil to generate an AC magnetic field over the gastrointestinal (GI) region and the ferromagnetic contrast ingested by subject produces a secondary magnetic field measured by the magnetometers. This technique is sensitive to distance variations between the magnetometers and the magnetic contrast, thus the method is capable of tracking the magnetic test meal through the GI tract as well as to assess GI motility. Both of them are important for diagnosis of different kind of diseases and to perform research related to the GI tract. A number of techniques have been used to evaluate the GI tract such as scintigraphy, fluoroscopy, and manometry. However, all of them present some inconvenience such as use of ionizing radiation or to be invasive. GI Scintigraphy is regarded as the gold standard method for the assessment of gastric motility and gastric emptying time (GET) in humans. However, its use for investigative purposes is prohibitive given its costs and the need to use a radioisotope as contrast. ACB has the competitive advantage over all of them. ACB is non-invasive, radiation-free, easy to perform, portable, and may be used for clinical and investigative purposes. It may open the door for unprecedented discoveries by expanding possibilities and increasing the efficiency of research, as well as to make accurate and reliable pediatric gastrointestinal diagnostics at a fraction of current costs without the risks of radiation. In addition, the ACB could have significant impact in physiological research, pharmacology, and pharmaceuticals.

Biography

Fabiano C. Paixao received the degree in Physics (2004) and completed his Ph.D. in General and Applied Biology (2009) at Univ. Estadual Paulista (UNESP), Bauru and Botucatu, SP, Brazil. In early 2010 and 2011, he was an Adjunct Professor at the Pontifical Catholic University of Rio Grande do Sul and former Professor of the Department of Physics and Biophysics at UNESP, between 2006 and 2009. He has published papers in reputed journals and conferences around the world. He has filed patents and founded a start-up business in US. He was a pioneer in making this work at UNESP.

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