0.058±0.007 in fasting, whereas for SG the frequency were 0.066±0.006 in postprandial and 0.059±0.008 in fasting. There was a strong correlation in frequency and amplitude and a little phase-difference between techniques when magnetic tracer was ingested. Our data demonstrated that ACB is an interestingly method for monitoring gastric wall contractions by using both magnetic materials implanted and ingested. In summary, ACB technique provides an accurate and sensitive methodology for studies of gastrointestinal motility in various animal models, including humans.

[13/05/10 - 16h45 - Room 10]
Candida albicans biofilm alterations during photodynamic therapy by Optical Coherence Tomography video monitoring, Anderson Zanardi de Freitas, Luis Cláudio Suzuki, Renato Araujo Prates, Marcus Paulo Raele, Marcello Magri Amaral, Martha Simões Ribeiro, *Instituto de Pesquisas Energéticas e Nucleares - CNEN/SP* ■ Reports in literature show that photodynamic therapy (PDT) presents a lethal effect on fungi, e.g. Candida albicans. It is based on the use of a photosensitizer (PS) in the presence of low intensity light to generate reactive oxygen species in biological systems. The purpose of this study was to analyze modifications in C. albicans biofilm in vitro during PDT using methylene blue (MB) and red light, with real time Optical Coherence Tomography (OCT). The OCT system used 930nm with 2mW of power and sequential images of 2000x512 pixels were generated at the frame rate of 2.5 frames/sec. The dimension of the analyzed sample was 6000 microns wide by 1170 microns of depth corrected by refraction index of 1.35. Images were recorded 1min before and 1min after the irradiation with LED for PDT, generating 1,200 images producing 8min of video. For biofilm growth, discs were made from elastomeric silicone catheters. The PS was dissolved in PBS solution, and a final concentration of 1mM MB was applied on the biofilm. A red LED (wavelenght = 630nm ± 20nm) was used for biofilm irradiation. We performed a curve of survival fraction versus time of irradiation and it was reduced by 100% following 6min of irradiation. OCT was performed for measurement of biofilm thickness, and it was 110 microns in the end time of biofilm formation. During the irradiation, the biofilm thickness changed in 70 microns. We conclude that OCT system is capable to show real time optical changes in yeasts organized in biofilm simultaneous to PDT.

[13/05/10 - 17h00 - Room 10]
Spectral analysis of multiple difference-frequency generation in nonlinear acoustics, Glauber T. Silva, , Anderson Bandeira de Melo, *Universidade Federal de Alagoas - AL - Brasil* ■ In this work, we analyze the spectrum yielded in multiple difference-frequency generation (DFG) of acoustic waves. Multiple DFG results from the nonlinear mixture of sinusoidal signals applied to two different sources. We choose the signal frequencies formed with a base (carrier) frequency in the megahertz range plus harmonics of the lowest (modulation) difference-frequency under 100 kHz. One source has even, while the other has odd difference-frequency harmonics. The analysis stems from the nonlinear advection equation for forward-propagating waves and solutions are obtained by the method of successive approximations. We obtain different spectra of the multiple DFG by adjusting the amplitudes of the applied sinusoidal signals. Parabolic as well as linear spectral distributions will be presented. Computational simulations based on the semi-Lagrangian numerical method are performed to validate the theoretical results. Our ultimate goal is to apply multiple DFG to multifrequency vibro-acoustography [IEEE Trans. Med. Imaging 25, 1284, 2006] in which several ultrasound continuous-waves are employed into two sources to produce images at the generated difference-frequencies. However, the increase in the number of simultaneous images reduces the signal-to-noise ratio (SNR) of the images. We observe that the amplitude of the difference-frequency signals obtained here are less reduced when compared to conventional multifrequency vibro-acoustography. Thus, the SNR can be increased by setting the amplitude of the produced signal, which may enhance the contrast of the obtained images.