

Title: Analytical investigation of biophoton emission and study of possible early diagnosis based on their statistical features

Name: Neda Rafieiolhosseini
Institute for Research in Fundamental Sciences, 19395-5531, Tehran, Iran

Background and aim: All biological samples emit ultra-weak photon emissons without any external pre-illumination. Ultra-weak photon emission can be considered as a new type of biological signal: a photonic biosignal. It is also known as biophoton, low-level chemiluminescence, and ultra-weak bioluminescence, in the literature. Biophotons have many potential applications, ranging from agriculture to medicine. The correlation between biophotons and physiological states creates the possibility of using them as a completely non-invasive method for diagnosis. In this research, we want to investigate statistical properties of biophotons and use them to distinguish between different physiological states.

Materials & Methods: In this research, we detected UPE from germinating mung bean seedlings. We also found an appropriate distribution function which perfectly fits the photocount distribution. We also used generalized linear models to investigate the effect of time and sucrose on the UPE intensity.

Results: We have found that Negative binomial distribution can be used to perfectly fit the photocount distributions. Furthermore, we found that sucrose has statistically significant effect on the intensity of UPE from mung beans over time.

Conclusion: Measurement of UPE can be used as a non-invasive, real time and low operation cost method for growth monitoring. We believe that the UPE signal can also be used for non-invasive monitoring of oxidative metabolic processes not only in mung beans, but also in other biological samples.

Biography

Neda Rafieiolhosseini has finished her MSc. at the age of 26 at Shahid Beheshti University of Medical Sciences. During her course of study she worked on ultra-weak photon emissoin from biosystems under the supervision of professor Hashem Rafii-tabar. She has started her PhD last year at Institute for Research in Fundamental Sciences (IPM) in computational physics. She has published 2 papers in this subject up to now.

Presenting author details

Full name: Neda Rafieiolhosseini
Contact number: +98 913 2701389
Twitter account: _
Linked In account: _

Session name/ number: Track 4- Biophysics
Category: (Oral presentation/ **Poster presentation**)