

# Intra-extracellular Electroanalysis Reveals Vesicular Serotonin Release from Pancreatic Beta Cells is Not all or None

Amir Hatami, <sup>1</sup> Lin Ren, <sup>1</sup> Haiqiang Dou, <sup>2</sup> Nikhil R. Gandasi, <sup>2</sup> Patrik Rorsman, <sup>2</sup> Andrew Ewing <sup>1</sup>

<sup>1</sup>Department of Chemistry and Molecular Biology University of Gothenburg, Kemivägen 10, 41296 Gothenburg (Sweden)

<sup>2</sup> Department of Physiology, Sahlgrenska Academy University of Gothenburg, Medicinaregatan 11-13, 413 90 Gothenburg (Sweden)

**Copyright:** 2021 Hatami A. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

Recent work has shown that chemical release during the fundamental cellular process of exocytosis in model cell lines is not all or none. [1-2] We tested this theory for vesicular release from single pancreatic beta cells. The vesicles in these cells release insulin, but also serotonin, which is detectable with amperometric methods. [3-4] We amperometrically quantified the number of serotonin molecules stored inside of individual nanoscale vesicles ( $39317 \pm 1611$ ) in the cell cytoplasm before exocytosis and the number of serotonin molecules released from single cells ( $13310 \pm 1127$  molecules) for each exocytosis event during stimulated release. Thus, beta cells release only one-third of their content, clearly supporting partial release in this system. This is an important result as it contrasts that in most diabetes research involving exocytosis, it is assumed that exocytosis is all or none.

## Biography:

Amir Hatami has completed his PhD at the age of 25 years from Shahid Chamran University and Postdoctoral Studies from the chemistry department, University of Gothenburg, Sweden. Currently, He is a senior researcher (POSTDOC MARIE CURIE). He has published more than 30 papers, 5 review papers in reputed journals and has been serving as a guest editor of Biosensors journal..

**Citation:** Amir Hatami, Intra-extracellular Electroanalysis Reveals Vesicular Serotonin Release from Pancreatic Beta Cells is Not all or None, 4th International Conference on Biosensors and Bioelectronics, Paris, France, May 21-22, 2021