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Platelet aggregation under a quantitative proteomics point of view: ADP, collagen and ureases as agonists

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Label-free spectral counting, co-immunoprecipitation and posphoproteomics are widely used as approaches in proteomics studies. These strategies were used in the present study to understand the interaction between urease from *Helicobacter pylori* and human platelets. Ureases are Ni-dependent metalloenzymes, distributed in bacteria, fungi and plants and catalyze the hydrolysis of urea into ammonium and carbon dioxide. Urease from *Helicobacter pylori* (HPU) possesses activities which are unrelated to urea hydrolysis, including platelet aggregation. In case of platelets, collagen and ADP are regular agonists of this process. Collagen in a first moment triggers the platelet aggregation and is followed by the release of ADP granules, which amplifies the aggregation process. The aggregation triggered by HPU seems to be through the same pathway as that triggered by collagen. The main idea of the present work was to investigate the protein mobilization triggered by ADP, collagen and HPU. The agonists (collagen, ADP or HPU) were added to the resting platelets (from healthy donors). The aggregation was performed for 5 min at 37ºC. Once the aggregation was finished, the "cloth" was washed 10 times with cold PBS containing 10 mM staurosporine and a phosphatase inhibitor cocktail and subsequently prepared for analysis using three different approaches: label-free spectral counting, co-immunoprecipitation and phosphoproteomics. Abundant protein was depleted and strategy used was validated using specific antibodies. The data is being collected and analyzed at this point.

Biography

Diogo Ribeiro Demartini finished his PhD (2007), at Graduate Program on Cell and Molecular Biology (UFRGS, Porto Alegre, RS, Brazil). After that, he spent two years as a Postdoctoral Fellow at the University of Missouri (Columbia, MO, USA). Dr. Demartini is involved in the studies of the interaction of ureases (from *Helicobacter pylori, Proteus mirabilis*) with target cells, using proteomics approaches. Dr. Demartini acts as a reviewer for specialized journals in the field and act as a co-supervisor for students at master and PhD levels. At this point, Dr. Demartini has published about 12 manuscripts and three book chapters.

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