Supplementary information

Differentiation of cisplatin uptake within a population of cancer cells – how to "crack this nut" using single-cell ICP-MS

Zuzanna Szymańska, Magdalena Matczuk*, Agnieszka Żuchowska, Paweł Romańczuk, Andrei R. Timerbaev and Maciej Jarosz

Cisplatin treatment

The MDA-MB-231 cells were seeded at a density of $5 \cdot 10^5$ cells/mL in Petri dishes. 1 mL of cells' suspension and 2 mL of culture medium (DMEM (BioWEST, Nuaillé, France) supplemented with 10% fetal bovine serum, 1% penicillin/streptomycin, and 1% L-Glutamin) was placed in each Peti dish. After 24 h, the culture medium was removed. Subsequently, 1 mL of cisplatin solution was added to each sample at a concentration of 0, 0.5, 1, or 5 ppm. In another batch of samples, 2 mL (instead of 1 mL) of cisplatin solution at a concentration of 1 or 5 ppm was added to several samples. Cisplatin solutions were prepared in a cell culture medium. Cells were incubated for 5 or 24 hours.

Table S1. SC-ICP-MS conditions.

Parameter	Value
Sample flow rate	10 µL·min^{-1}
Dwell time	100 µs
Sample analysis time	60 s
Nebulizer gas flow rate	0,5 L·min^{-1}
Make-up gas flow rate	0,6 L·min^{-1}
Isotope	$^{195}Pt^+$

Calibration

The calibration curve was prepared using 0.5, 1, 5, 10, and 20 ppb ionic Pt solutions in the cell culture medium to matrix match cell samples. The transport efficiency of calibration solutions was determined with 50-nm gold nanoparticles (BBI Solutions, Crumlin, Great Britain). Calibration was performed daily.

Data for Fig. 2, Fig.3, and Fig. 4 was collected with calibration curve $y = 12334x - 1636.9$. $R^2 = 0.9982$.

Transport efficiency

Transport efficiency of calibration solutions reached 69%.