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L-cysteine as a reducing/capping/gel-forming agent for the preparation of silver nanoparticle compositions with anticancer properties

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Contents

Viscosity measurements

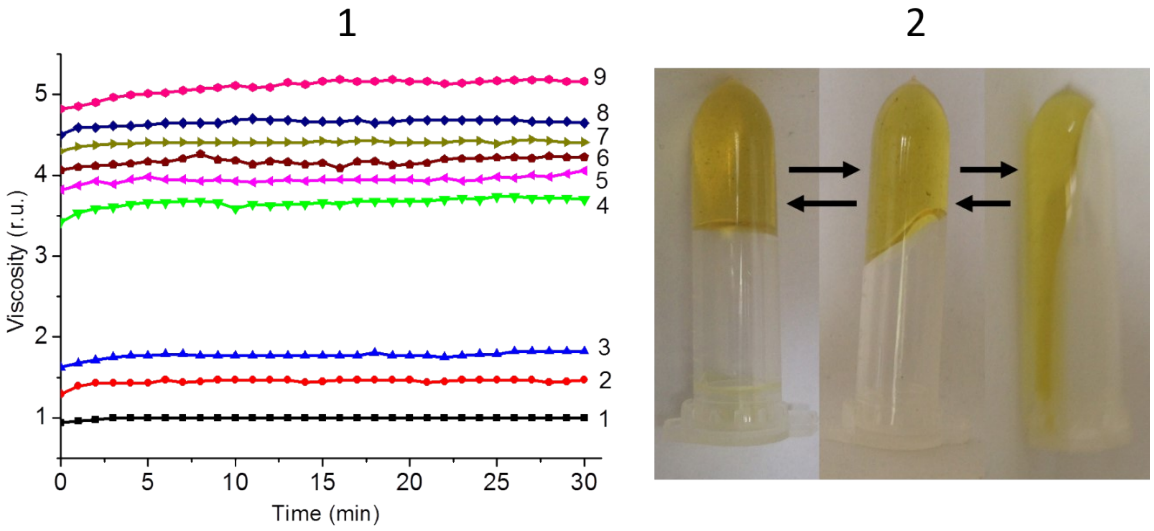

Figure S1. 1 – the systems obtained after 3 h at mixing of CYS/AgX (X=NO_2^-, NO_3^- or CH_3COO, see experimental section): bidistilled water (1), CS-4 (2), CS-3 (3), CS-8 (4), CS-7 (5), CS-6 (6), CS-5 (7), CS-2 (8) and CS-1 (9). **2** – the mechanical destruction – restoration of hydrogels.

TEM

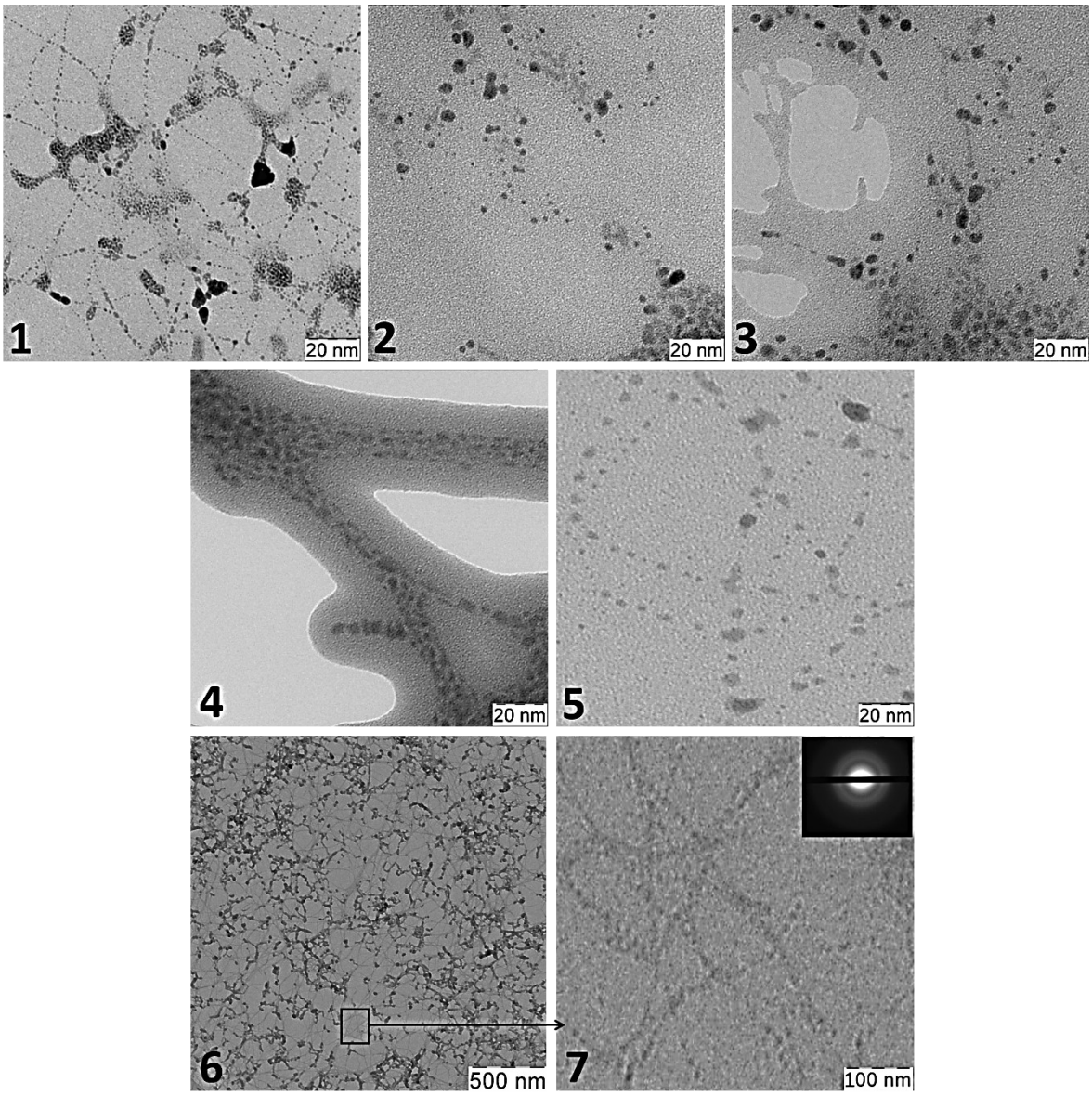

Figure S2. TEM images of the systems containing AgNPs: **1 –** CS-1, **2** – CS-3, **3** – CS-4, **4** - CS-5 and **5** – CS-7; **6,7** – CS-2 at different scale.

SEM

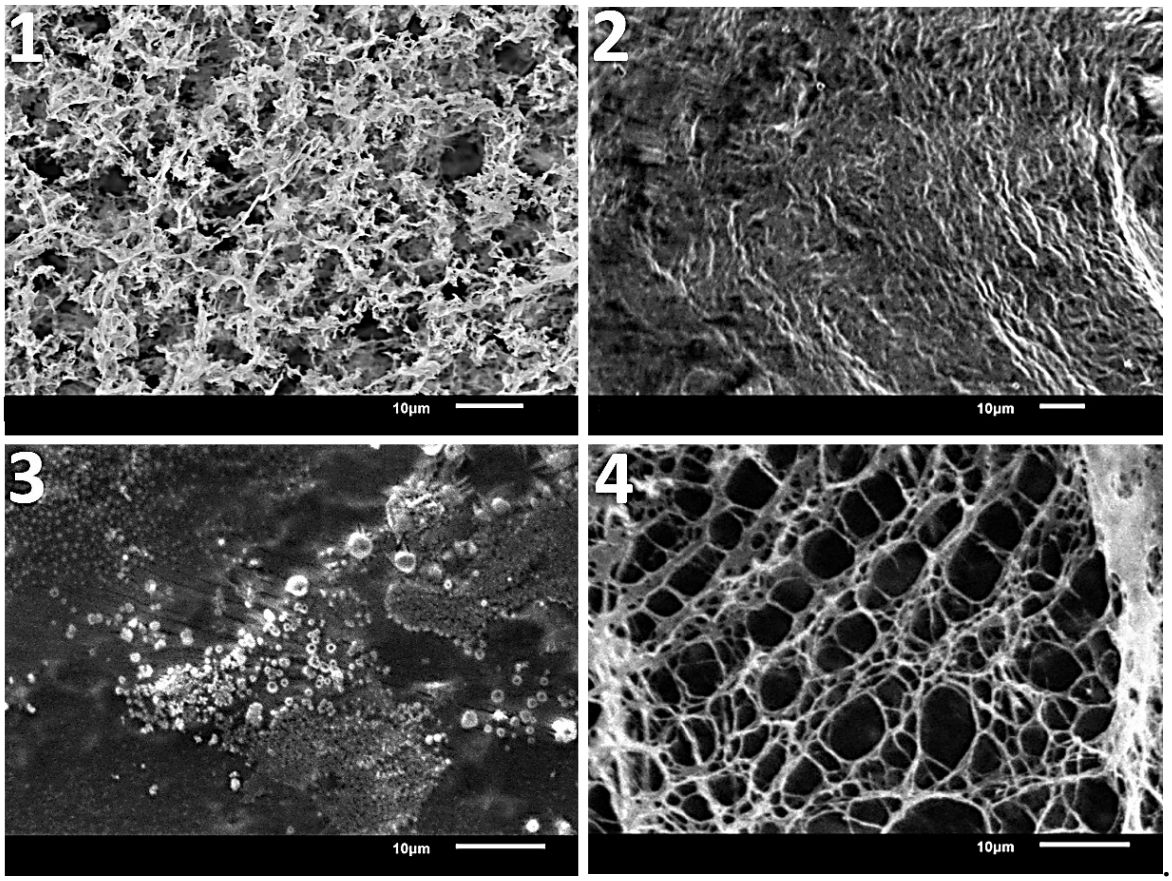

Figure S3. SEM micrographs of the systems containing AgNPs: **1** - CS-1, **2** – CS-3, **3** – CS-7 and **4** – CS-5.

UV analysis

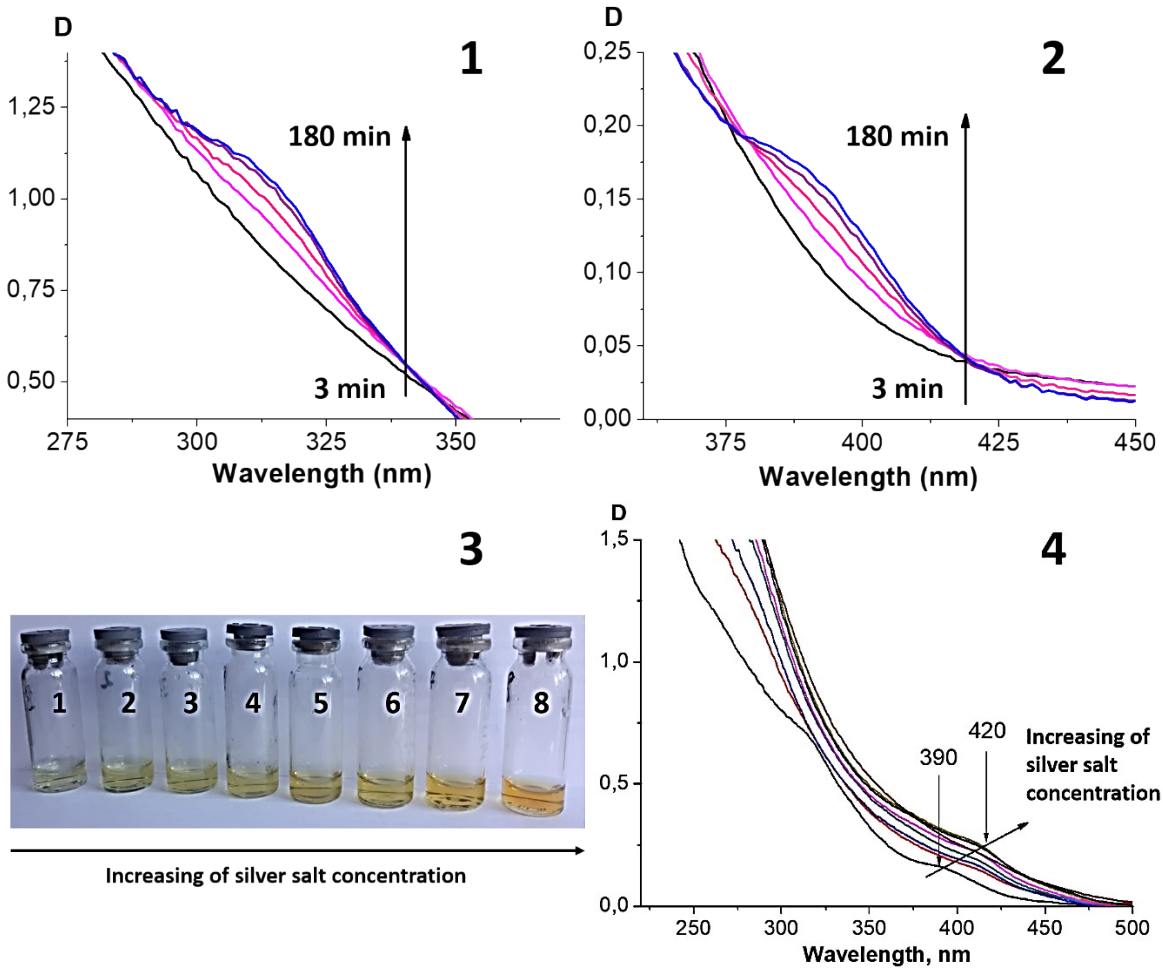

Figure S4. UV-spectra (kinetic curves of 315 (**1**) and 395 nm (**2**) absorption bands) of the systems containing AgNPs; **4** - the systems containing AgNPs obtained after 3 h at mixing of CYS/AgX (X=NO_2^-, NO_3^- or CH_3COO^-, see experimental section) of the various ratio: 0.5:1, 0.75:1, 1:1, 1:1.25, 1:1.5, 1:1.75, 1:2 for 1-8 systems (photo on the left – **3**) respectively.

DLS and NTA

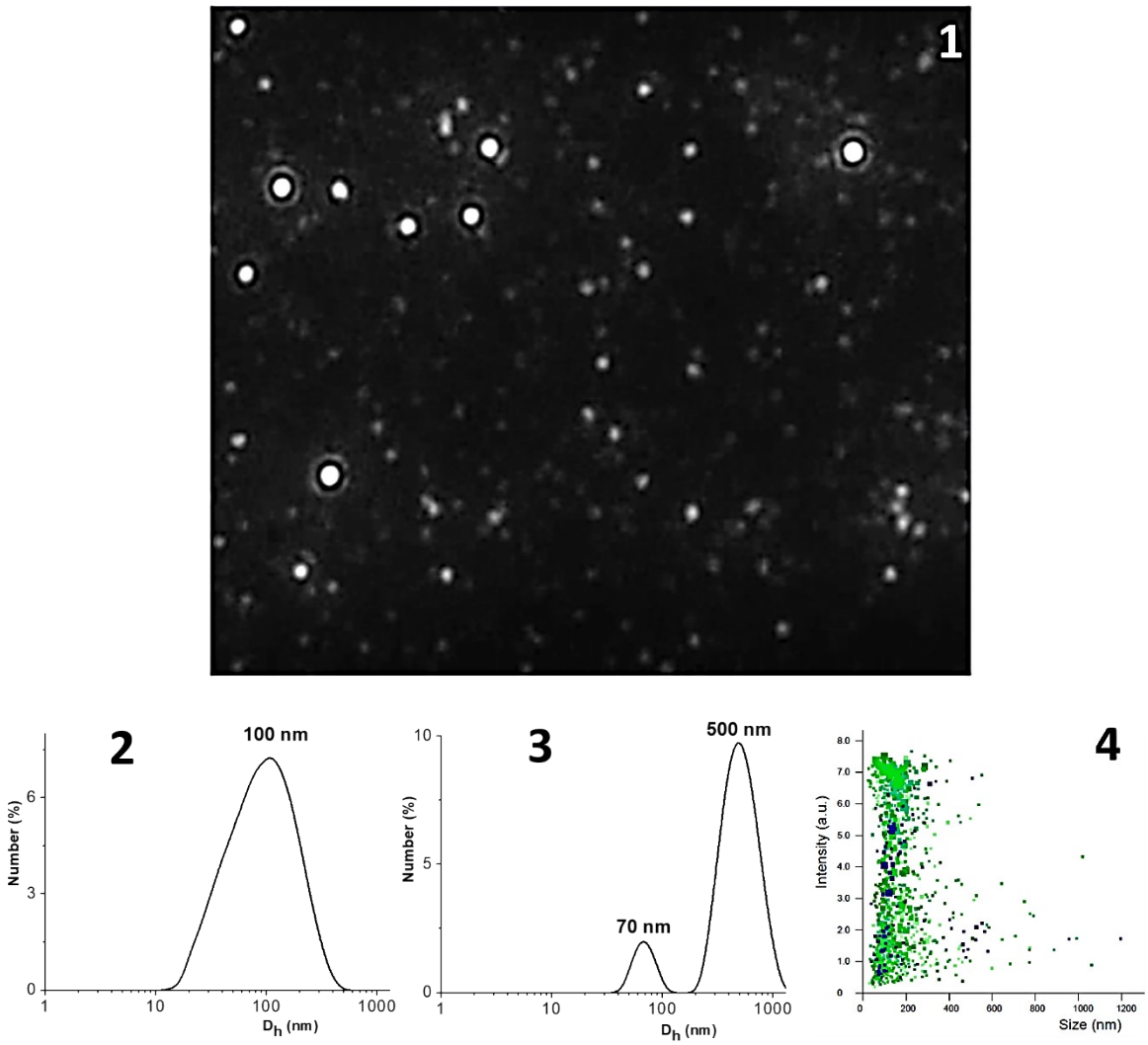

Figure S5. 1 - Instant photo of the systems containing AgNPs got by NTA; **2,3** - Particle size distributions of the systems with adding Cl^- and SO_4^{2-} respectively; **4** - Particle size distributions of the systems with SO_4^{2-} received by NTA.

EDS analysis

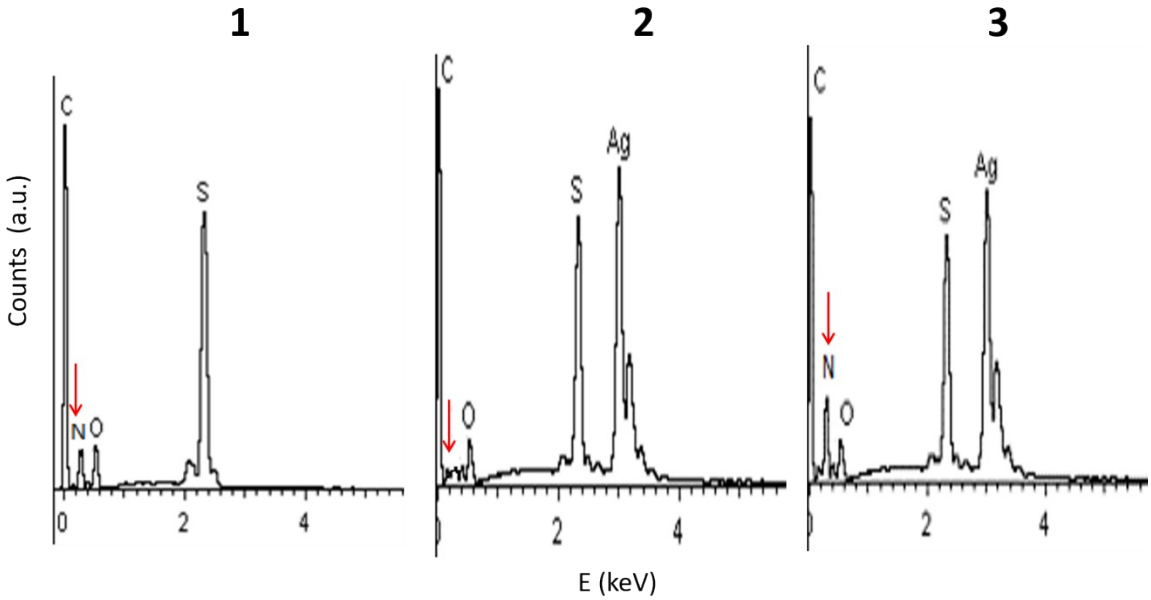

Figure S6. Elemental analysis of CYS (**1**), CS-1 and CS-2 (**2**), CS-3 and CS-4 (**3**).

FTIR analysis

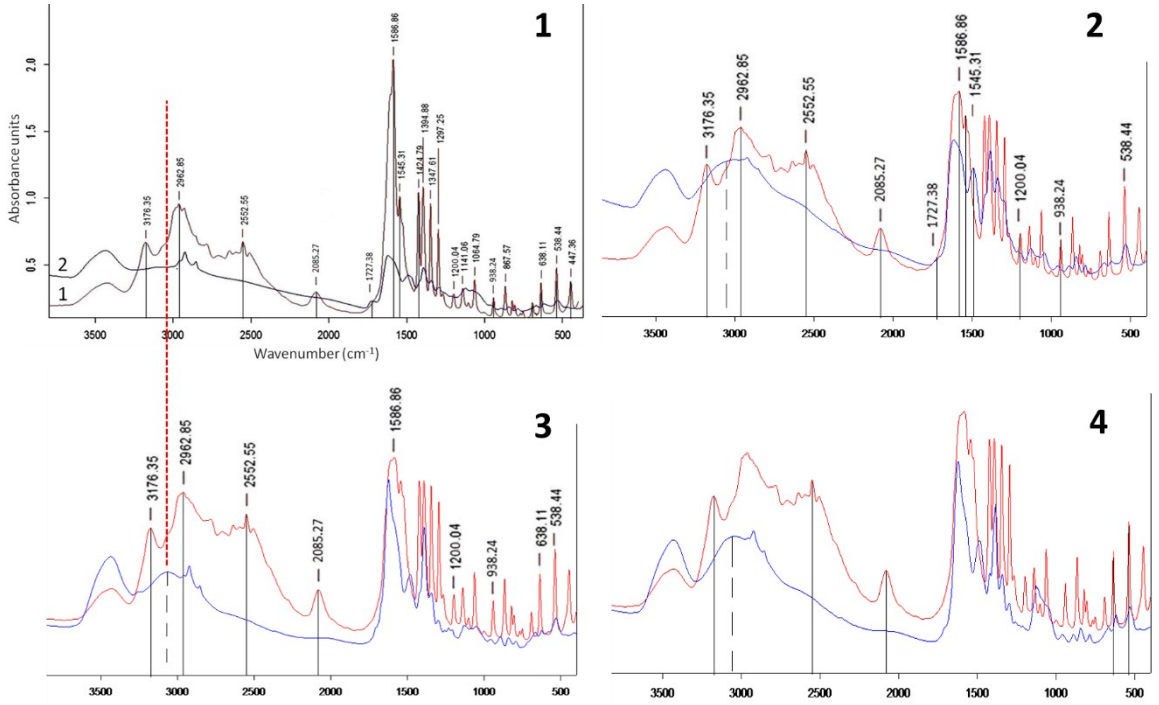

Figure S7. FTIR spectra of the systems containing AgNPs: **1** – CS-1 (CS-2), **2** – CS-3, **3** – CS-4, **4** – CS-5. Red curves (1) – CYS and Blue curves (2) – CYS/AgX systems.

Analysis of the cell cycle of MCF-7 cells incubated with systems containing AgNPs

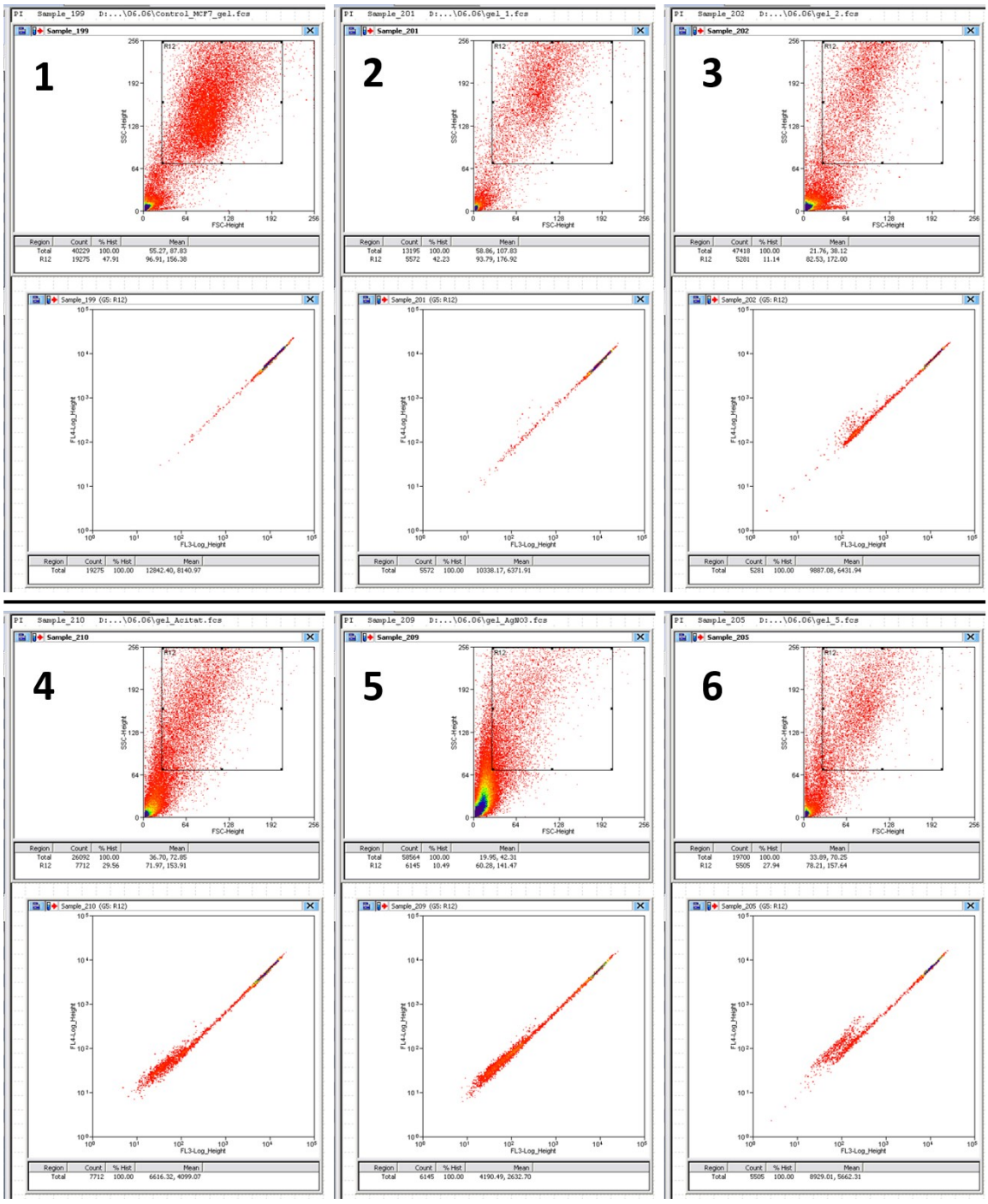

Fig S8. The flow cytofluorometric analysis of intact MCF-7 cells incubated for 24 h with systems containing AgNPs in a medium containing 10% FBS. **1** – control (without samples), **2** – CS-1, **3** – CS-2, **4** – CS-4, **5** – CS-3, **6** – CS-5. Sample concentration is 80 μM. The X axis, FSC-Height – forward scatter height; The Y axis, SSC-Height – side scatter height.

Table S1. Data obtained from the flow cytofluorometric analysis of intact MCF-7 cells incubated for 24 h with systems containing AgNPs in a medium containing 10% FBS.

The Sample	G2/M (R9), %	G0/G1 (R10)	S (R11)
Control	99,39	0,26	0,46
CS-1	95,35	2,71	2,44
CS-2	79,72	17,61	2,92
CS-4	67,52	25,53	7,92
CS-3	40,60	50,98	9,24
CS-5	77,49	19,87	2,92

MTT assay of the systems containing AgNPs to Wi-38 cells

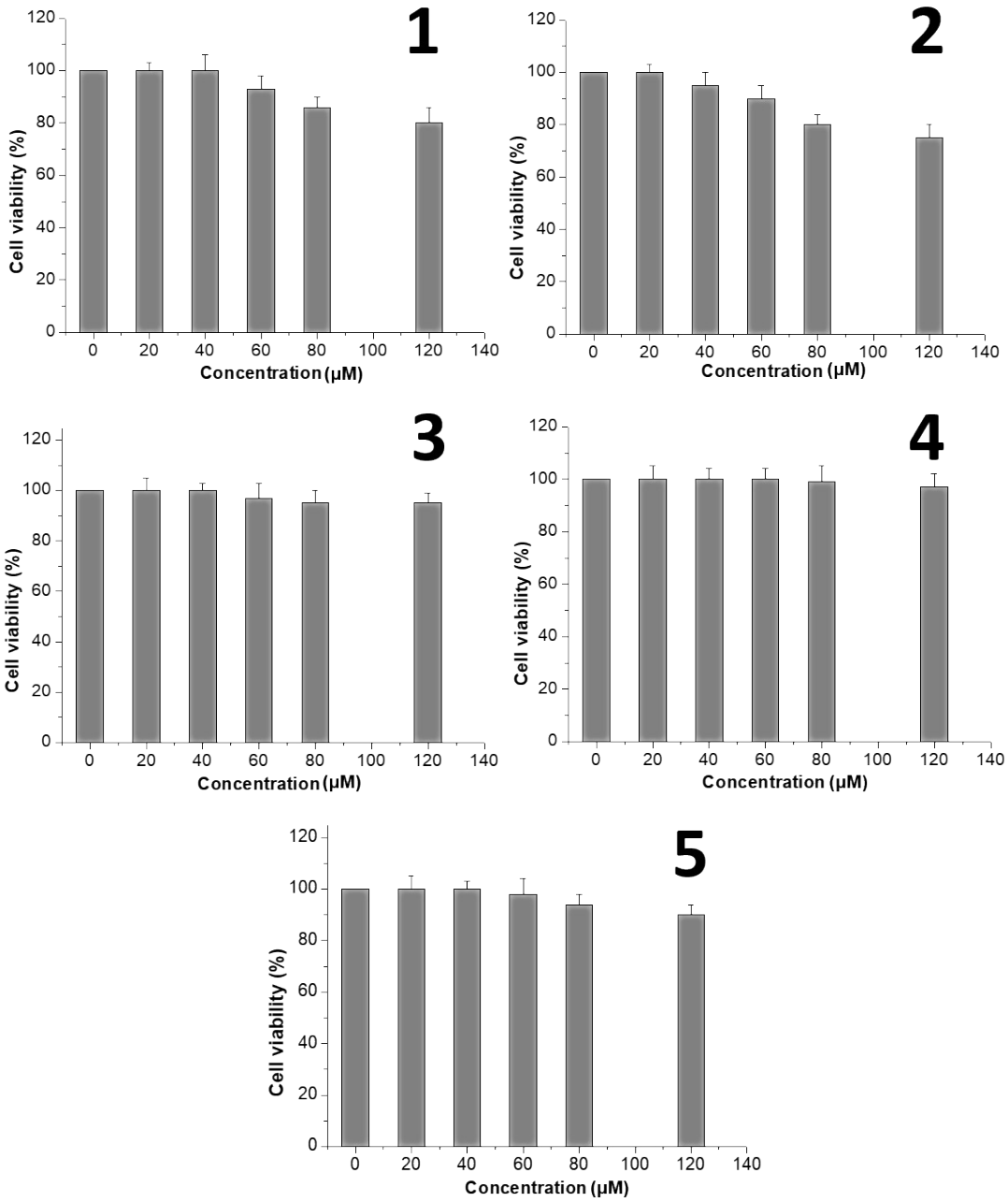

Fig S9. Cytotoxicity (MTT-test) of systems containing AgNPs to the Wi-38 fibroblast cells: a – CS-1, b – CS-2, c – CS-3, d – CS-4, e – CS-5. The Wi-38 cells incubation with systems is 72 h.