Corrigendum

Corrigendum to “Toxicity of Graphene Shells, Graphene Oxide, and Graphene Oxide Paper Evaluated with *Escherichia coli* Biotests”

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Received 30 May 2015; Accepted 12 October 2015

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The paper titled “Toxicity of Graphene Shells, Graphene Oxide, and Graphene Oxide Paper Evaluated with *Escherichia coli* Biotests” [1] contains textual errors we wish to correct. The corrections are as follows.

In Section “2.1. Graphene-Family Nanomaterials” the sentence “Aqueous suspensions of GS and GO (from 10^{-3} to 2×10^{-5} mg/L) ...” has numerical errors. The correct sentence is as follows: “... (from 1000 to 20 mg/L) ...”

In Section “2.6. Efflux of Intracellular DNA Content” the sentence “The plasmid-containing *E. coli* K12 TG1 *lac::lux* strain was cultured in mid-exponential growth phase with ampicillin and then separated from its cultivation medium and incubated with aqueous GO suspensions at concentrations of 1.25×10^{-4} , 5×10^{-4} , and 2×10^{-3} mg/L for 60 min, ...” has numerical errors. The correct sentence is as follows: “... at concentrations of 125, 500, and 2000 mg/L ...”

In Section “2.7. Zeta Potential Measurement” the sentence “A bacterial suspension (3.7×10^8 CFU/mL) was mixed with serially diluted GO aqueous suspensions to a final concentration from 3.1×10^{-5} to 5×10^{-4} mg/L” has numerical errors. The correct sentence is as follows: “... to a final concentration from 31.25 to 500 mg/L.”

In Section “3.1.1. GFN Toxicity Assessment Using a Bacterial Bioluminescence Inhibition Assay” the sentence “In the current system containing 3.7×10^8 CFU/mL cells, GO toxicity was characterized by EC50 values of $1.13 \pm 0.05 \times$

10^{-4} , $1.04 \pm 0.03 \times 10^{-4}$, and $7.92 \pm 0.24 \times 10^{-5}$ mg/L ...” has numerical errors. The correct sentence is as follows: “... by EC50 values of 113.1 ± 4.52 , 104.2 ± 3.12 , and 79.2 ± 2.37 mg/L ...”

The sentence “At the 60th min of measurement these values varied from $1.13 \pm 0.05 \times 10^{-4}$ to $2.55 \pm 0.10 \times 10^{-5}$ mg/L ...” has numerical errors. The correct sentence is as follows: “... values varied from 113.1 ± 4.52 to 25.5 ± 1.01 mg/L ...”

In Figure 4 legend designations have numerical errors: “1: 10^{-3} mg/L; 2: 5×10^{-4} mg/L; 3: 2.5×10^{-4} mg/L; 4: 1.25×10^{-4} mg/L; 5: 6.25×10^{-5} mg/L; 6: 3.13×10^{-5} mg/L; 7: 1.56×10^{-5} mg/L; 8: 7.81×10^{-6} mg/L; 9: 3.91×10^{-6} mg/L; C: control; wp: white paper, bp: black paper, GO-P: graphene oxide paper.”

The correct designations are as follows: “1: 1000 mg/L; 2: 500 mg/L; 3: 250 mg/L; 4: 125 mg/L; 5: 62.5 mg/L; 6: 31.25 mg/L; 7: 15.62 mg/L; 8: 7.81 mg/L; 9: 3.91 mg/L; C: control; wp: white paper; bp: black paper; GO-P: graphene oxide paper.”

The x-axis values of GO in Figure 5 should be corrected to the following: from 0 to 250 mg/L.

In Table 2 the values of EC50 (mg/L content) should be replaced by those shown in the corrected table.

In Section “3.1.2. GFN Bioactivity in a Fluorescent Cell Assay” the sentence “In contrast, bacterial cells treated with GO suspensions became red-fluorescent after 60 min in

FIGURE 5

TABLE 2: Dose-dependent and time-dependent GO aqueous suspensions toxicity in bacterial bioluminescence inhibition assay characterized by EC50 value (mg/L content) at varying bacterial cell number in the sample.

<i>E. coli</i> K12 TG1 <i>lac::lux</i> , CFU per 1 mL	Time measurement		
	60 min	120 min	180 min
3.70×10^8	113.1 ± 4.52	104.2 ± 3.12	79.2 ± 2.37
1.85×10^8	88.1 ± 2.64	82.0 ± 3.27	56.7 ± 1.69
9.25×10^7	55.7 ± 2.22	50.4 ± 2.26	38.8 ± 1.16
4.62×10^7	25.5 ± 1.01	24.9 ± 0.99	22.8 ± 0.89

a dose-dependent manner, from $48.8 \pm 1.9\%$ (at 1.25×10^{-4} mg/L GO) to $93.0 \pm 2.8\%$ (at 5×10^{-4} mg/L GO) ...” has numerical errors. The correct sentence is as follows: “... from $48.8 \pm 1.9\%$ (at 125 mg/L GO) to $93.0 \pm 2.8\%$ (at 500 mg/L GO).”

In Figure 6 legend, the *E. coli* K12 TG1 cells were treated with graphene shells suspensions at 1000 mg/L instead of 10^{-3} mg/L and treated with graphene oxide suspension at 125 mg/L instead of 1.25×10^{-4} mg/L.

In Section “3.2.1. GO Validation as a Potential Oxidative Stress Inducer in Lux-Biotests” the sentence “The 1.2–1.5-fold light intensity growth only has been recorded at subtoxic GO concentrations (1.95×10^{-6} – 10^{-3} mg/L)” has numerical errors. The correct sentence is as follows: “... at subtoxic GO concentrations (1.95–1000 mg/L).”

The sentence “In turn, GO concentrations of 2×10^{-3} mg/L or more were toxic ...” should be corrected to the following: “In turn, GO concentrations of 2000 mg/L or more were toxic. ...”

In Section “3.2.2 Intracellular DNA Efflux Measurement in GO-Treated *Escherichia coli* Cells” the sentence “In turn, DNA levels in supernatants of cells exposed to GO at concentrations of 1.25×10^{-4} – 2×10^{-3} mg/L ...” should be corrected to the following: “... 125–2000 mg/L ...”

In Section “3.2.3. Effect of GO Treatment on Zeta Potential Properties of *Escherichia coli* Cells” the sentence “Finally, the GO concentration required for complete zeta potential neutralization was 2.50×10^{-4} mg/L, whereas concentrations in the range of 3.13×10^{-5} – 1.25×10^{-4} mg/L ...” has numerical errors. The correct values are “... 250 mg/L ...” and “... 31.25–125 mg/L ...”, respectively.

FIGURE 7

The x-axis values of GO in Figure 7 should be corrected to the following: from 0 to 500 mg/L.

These corrections do not influence the results, discussion, or conclusion of this work.

References

- [1] L. V. Efremova, A. S. Vasilchenko, E. G. Rakov, and D. G. Deryabin, “Toxicity of graphene shells, graphene oxide, and graphene oxide paper evaluated with *Escherichia coli* biotests,” *BioMed Research International*, vol. 2015, Article ID 869361, 10 pages, 2015.