Comparison of transfection efficiencies between Exgen and Metafectene

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Introduction:

Transient transfection is a basic technique used in most if not all laboratories using mammalian cell cultures. In our laboratory, we have tested various reagents, including Lipofectamine (Invitrogen), Fugene (Roche), Superfect (Qiagen), and Exgen (Fermentas). Up to now, we have found that with neuroblastoma cell lines, including mouse N2a, human BE(2)M17 and SK-N-SH, the best reagent in terms of cost/efficiency/toxicity was Exgen. In our continuous efforts to obtain better transfection efficiencies, we have tested Metafectene Pro.

Materials and methods:

Mouse N2a neuroblastoma and human neuroblastoma SK-N-SH cells were maintained in Dulbecco's modified Eagle's medium plus 10% fetal bovine serum (Wisent). Human Neuroblastoma BE(2)M17 cells were maintained in Optimem plus 10% fetal bovine serum (Invitrogen). Transfections were carried out according to the manufacturer's protocol (Invitrogen). Metafectene Pro, a polycationic lipoplex transfection reagent was kindly provided by Dr. Stefan Hofreiter from Biontex Laboratories GmbH (Martinsried, Germany). Exgen was purchased from MBI Fermentas. The GFP expression plasmid pCEP4-EGFP was constructed in the laboratory.

Experimental procedures / transfection protocol:

The cells were seeded onto 24-well plate in the density of 8x104 cells per well, in 0.5 ml of medium. The chosen cell density guaranteed approximately 70 % of confluency after 24 h. The transfection was carried out 24 h later. The amount of plasmid used was 0.5 µg per well, with the DNA / Metafectene Pro ratios (µg / µl) 1:2, 1:4 and 1:8. The amount of plasmid used was 0.5 µg per well, with the DNA / Exgen ratios (µg / µl) 1:2. 5, 1:3.5 and 1:4.5. For each condition DNA and a proper amount of Metafectene Pro or Exgen were dissolved and incubated according to the manufacturer. After incubation, the solution with DNA – reagent was poured dropwise into the cell culture.
The transfection efficiency was evaluated after 24 h.

Results and discussion:

The highest transfection efficiency was achieved with the 1:4 DNA / Metafectene Pro ratio, reaching 60 % for N2a, 45 for SK-N-SH, and 53 for BE(2)M17 cells after 24 h (Fig. 1). Exgen reagent gave similar transfection efficiencies with a ratio of 1:3.5 (Fig 2).

Conclusion / summary:

Metafectene Pro lipophilic agent is as efficient as the non-liposomal Exgen agent in transfecting several neuronal cell lines.

Figure 1

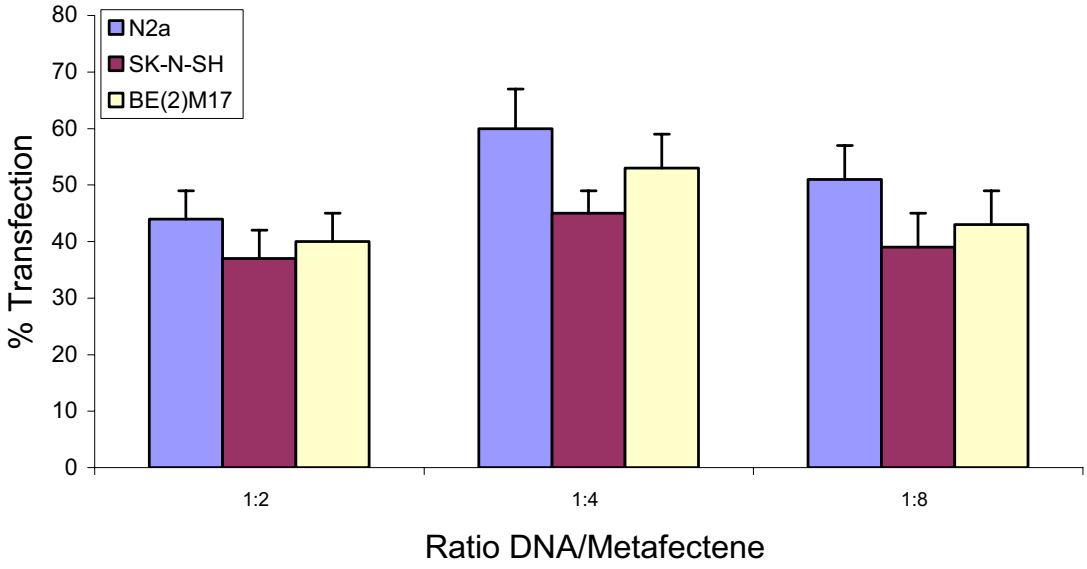

Figure 2