

DDIT4 mRNA level determines aspirin effect on *NDRG1* expression in MDA-MB-468 human breast cancer cell line

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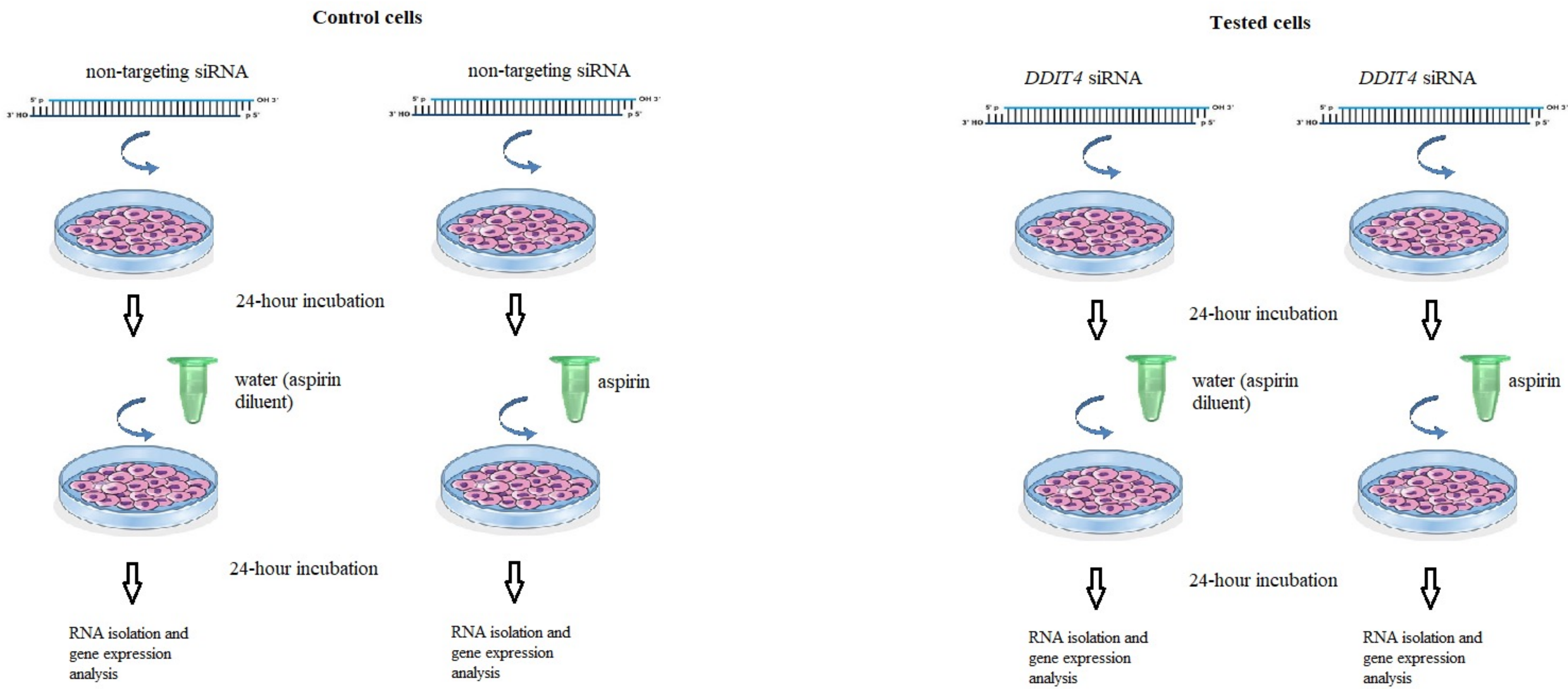
Objective

NDRG1 (N-myc downstream-regulated gene 1) is overexpressed in approximately 25% of cases in TCGA (The Cancer Genome Atlas) breast cancer data set. Elevated *NDRG1* mRNA amount in breast tumor has been associated with poor prognosis in a large meta-analysis of 23 cohorts. *NDRG1* has been suggested to contribute to breast cancer aggressiveness through regulation of fatty acid metabolic fate.

We previously found that knockdown of *DDIT4* (DNA damage-inducible transcript 4) facilitates aspirin-mediated dephosphorylation of mTORC1 target 4E-BP1 in breast cancer cells. In the present study, we **aimed** to test whether *DDIT4* mRNA amount affects the expression of *NDRG1*, which is downstream of mTORC2, after aspirin exposure.

Methods

- ❑ **MDA-MB-468** human breast cancer cell line was used in this study.
- ❑ Down-regulation of *DDIT4* mRNA level was carried out by **siRNA transfection**.
- ❑ Expression of *NDRG1* and *DDIT4* genes was analyzed by **quantitative reverse transcription-PCR**.



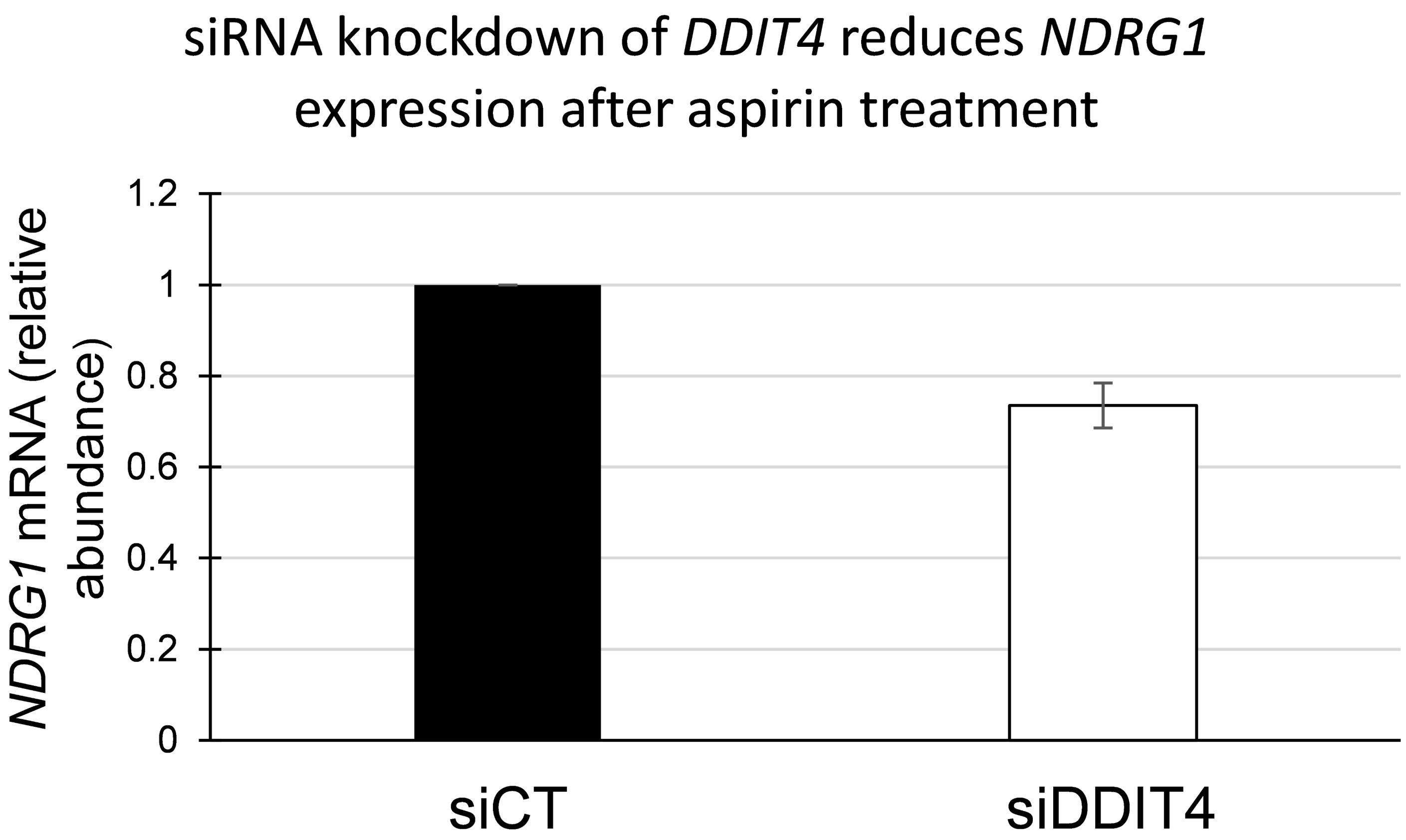
The scheme of the study design

Results

siRNA knockdown of *DDIT4* attenuated *NDRG1* mRNA expression 1.36-fold following aspirin exposure in MDA-MB-468 cell line.

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Relative expression of *NDRG1* following aspirin treatment in cells transfected with non-targeting siRNA (siCT) and cells transfected with siRNA against *DDIT4* (siDDIT4)

Conclusions

DDIT4 mRNA level determines *NDRG1* expression following aspirin treatment in breast cancer cells. This data provides a rationale to assess whether *DDIT4* expression in breast tumors predicts response to aspirin treatment in clinical setting.

Key words

Aspirin, *NDRG1*, *DDIT4*, siRNA knockdown