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Growth inhibition and cell cycle arrest effects of epigallocatechin gallate in the NBT-II bladder tumour cell line.

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**OBJECTIVES:** To examine the growth inhibition and cell cycle arrest effects of epigallocatechin gallate (EGCG), a major constituent of green tea polyphenols, on the NBT-II bladder tumour cell line. **MATERIALS AND METHODS:** Growth inhibition and cell cycle arrest effects of EGCG were evaluated by the tetrazolium assay, flow cytometry and apoptotic DNA ladder tests. The cell cycle-related oncogene and protein expressions in NBT-II bladder tumour cells, when incubated with EGCG, were detected with reverse transcription-polymerase chain reaction (RT-PCR) and Western blot analysis. **RESULTS:** EGCG inhibited growth of the NBT-II bladder tumour cells in a dose- and time-dependent manner. Flow cytometry showed a G<sub>0</sub>/G<sub>1</sub> arrest in cells when cultured with EGCG at doses of 10, 20 or 40 micro mol/L for 48 or 72 h. The apoptotic DNA ladder test showed that EGCG at 10 micro mol/L induced early apoptosis after 48 h of incubation. A down-regulation of cyclin D1 was detected by RT-PCR when the cells were incubated with EGCG (20 micro mol/L for 48 h. EGCG also down-regulated protein expression of cyclin D1, cyclin-dependent kinase 4/6 and phosphorylated retinoblastoma protein, in both a time- and dose-dependent manner, when detected by Western blot. **CONCLUSION:** EGCG had growth inhibition and cell-cycle arrest effects in NBT-II bladder tumour cells by down-regulating the cyclin D1, cyclin-dependent kinase 4/6 and retinoblastoma protein machinery for regulating cell-cycle progression.