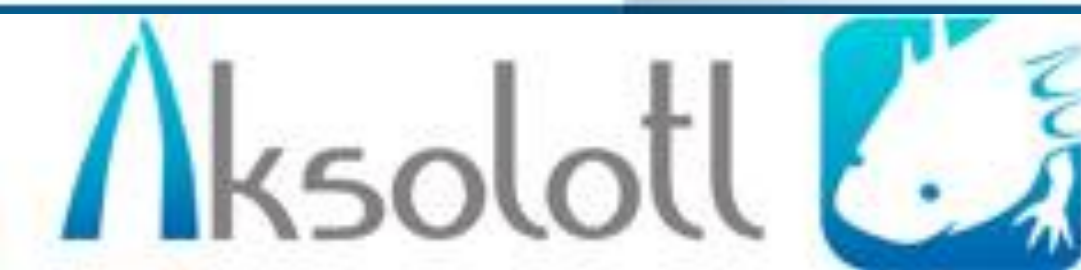


Ciprofloxacin action against genitourinary cancer cell lines

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Introduction

Ciprofloxacin is an antibiotic with anticancer properties that belongs to the fluoroquinolone class. The anticancer effect against genitourinary cancers of this drug can be enhanced due to the ability of ciprofloxacin to accumulate in higher concentrations in urine and prostate gland than in serum after an intravenous (i.v.) and oral administration. Aim of this study was to test cytotoxic properties and mode of action of ciprofloxacin against genitourinary cancer cell lines *in vitro*.

Results

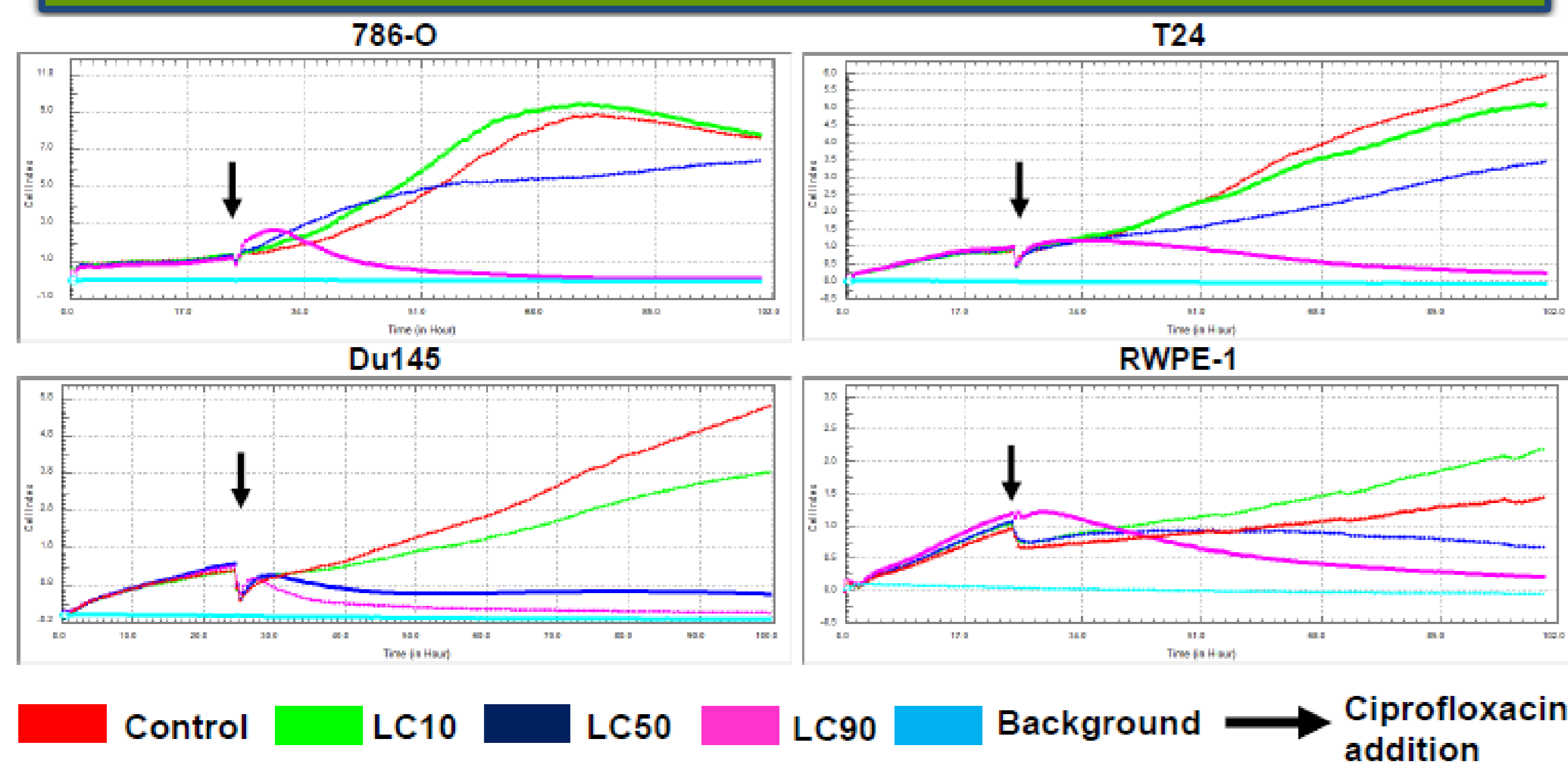


Fig. 1. Real time analysis of cell growth using RTCA (Real Time Cell Analyzer). Ciprofloxacin decrease proliferation of all tested cell lines. In case of normal cell line (RWPE-1) low-dose of ciprofloxacin (LC10) increase cell proliferation.

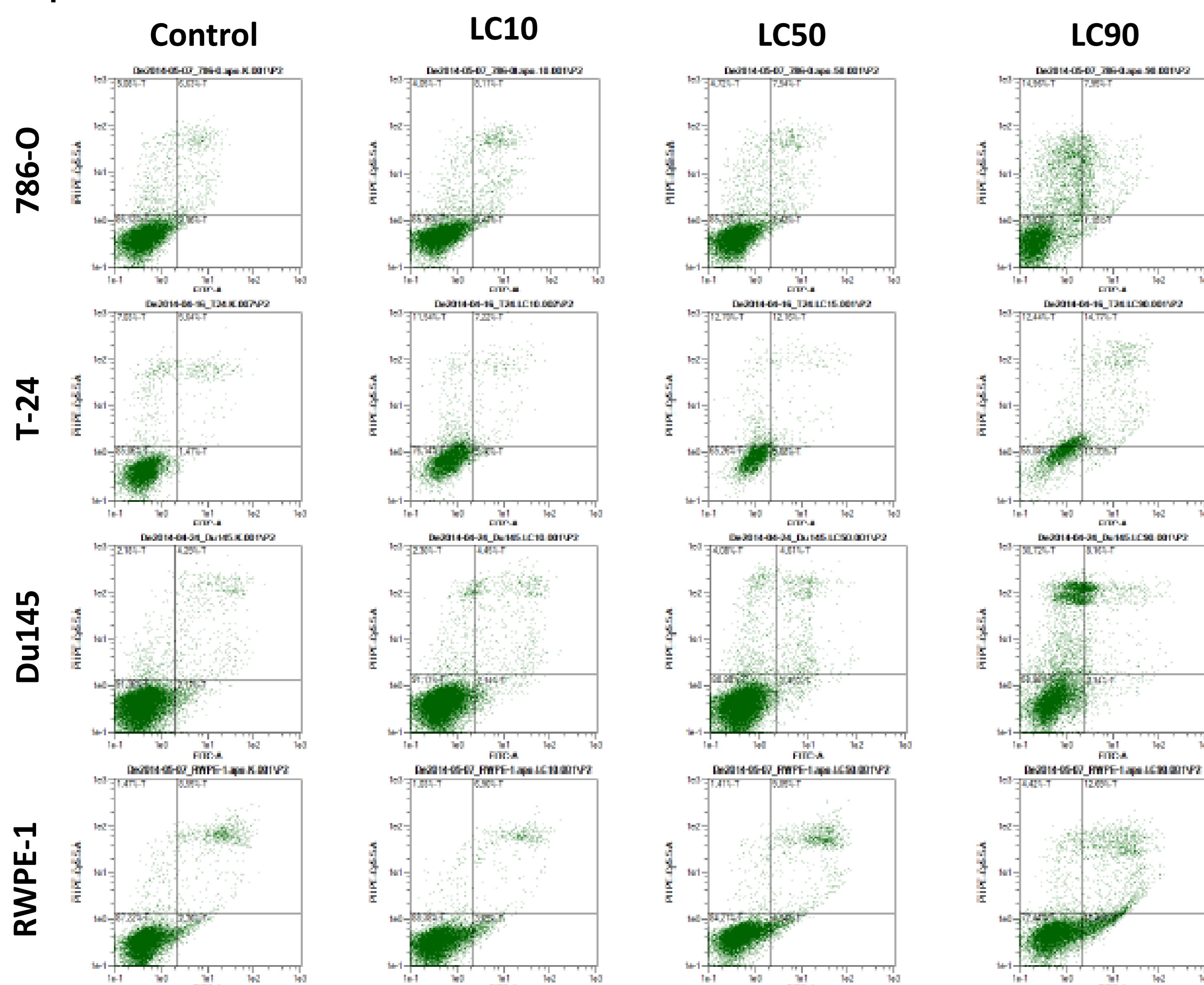


Fig. 2. Apoptosis analysis. Different pattern of cell death in cancer cell lines (786-O, T-24 and Du145) with predominance of necrotic cells can be observed in comparison to normal cell line (RWPE-1) in which more apoptotic cells are presented.

Conclusions

Ciprofloxacin is effective against genitourinary cancer cell lines *in vitro*. Different mode of action in cancer cell lines compared to normal cell line makes ciprofloxacin an attractive candidate for *in vivo* experiments.

Materials and Methods

Three cancer (786-O – renal carcinoma; T-24 – bladder carcinoma; Du145 – prostate carcinoma) and one normal (RWPE-1 – epithelial prostate) cell lines were tested using ciprofloxacin correspondings to Lethal Concentration (LC) values established earlier using trypan blue assay. Real Time Cell Analyzer (RTCA) belongs to xCELLigence system was used to examine influence of ciprofloxacin on cell growth. Flow cytometry was used to analyze apoptosis and cell cycle.

$\mu\text{g/ml}$	786-O	T24	Du145	RWPE-1
LC10	12.40	8.30	21.95	13.17
LC50	81.55	54.58	144.41	86.64
LC90	270.89	181.31	479.71	287.82

Tab. 1. Lethal Concentration (LC) values established for tested cell lines after 24h incubation with ciprofloxacin using trypan blue assay.

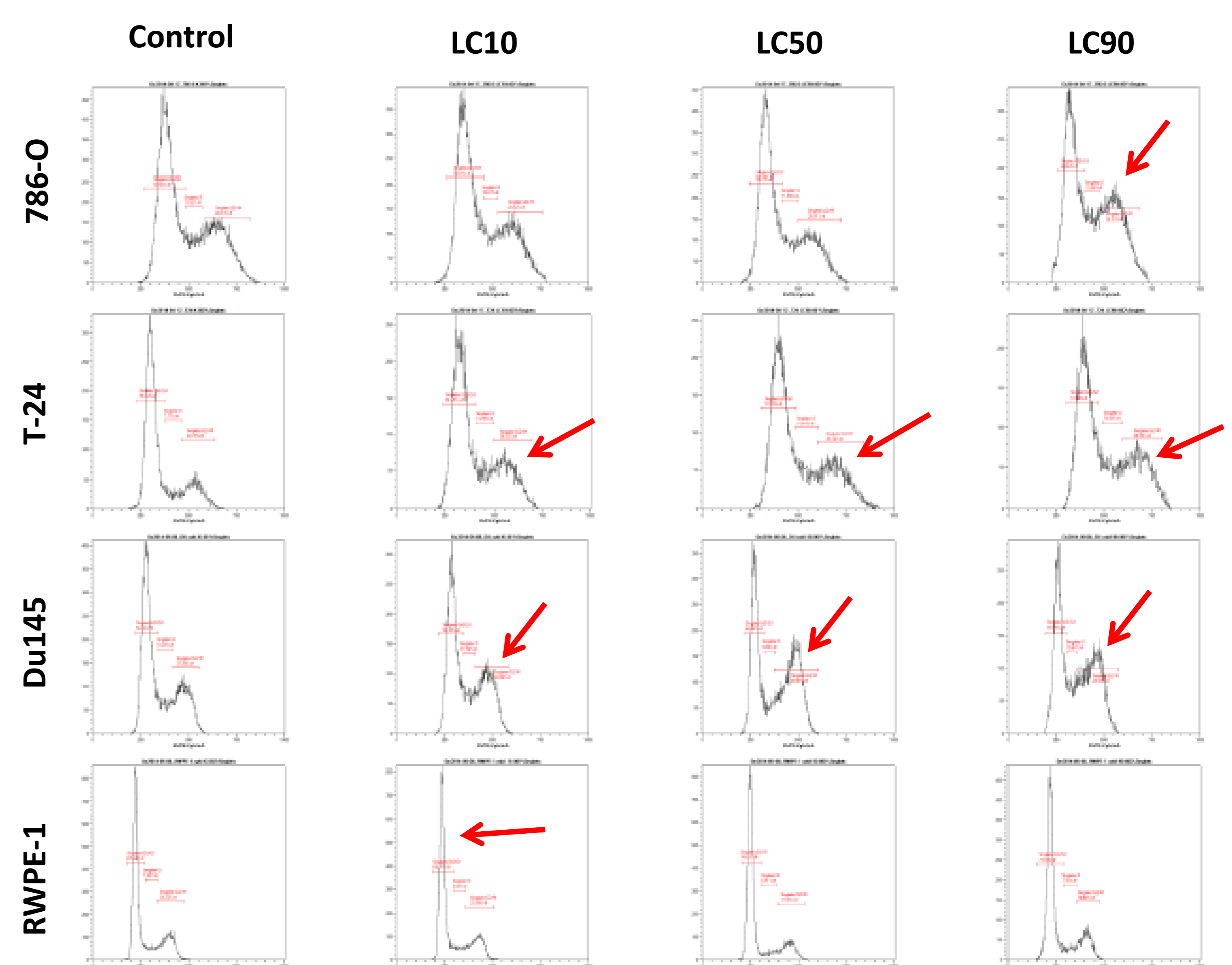


Fig. 2. Cell cycle analysis. Ciprofloxacin does not affect cell cycle in case of normal cell line (RWPE-1) increasing proliferation in low-doses (LC10). In case of cancer cell lines ciprofloxacin leads to accumulation of cells in G2/M (786-O and Du145) or S and G2/M (T-24) phases indicating arrest of cell cycle at these points.