

# The effect of the antibiotics used for regenerative endodontics on cell survival

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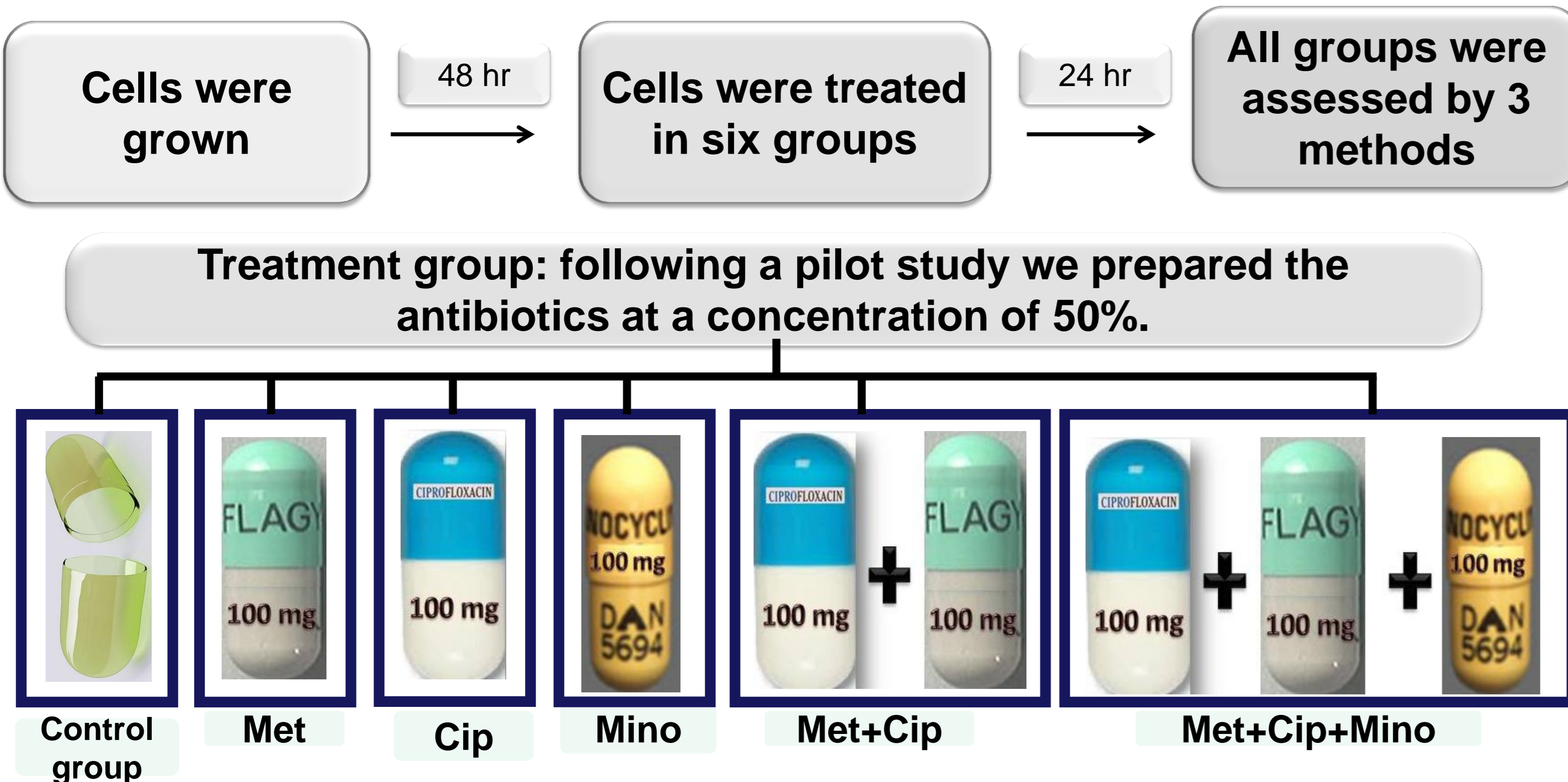
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## AIM

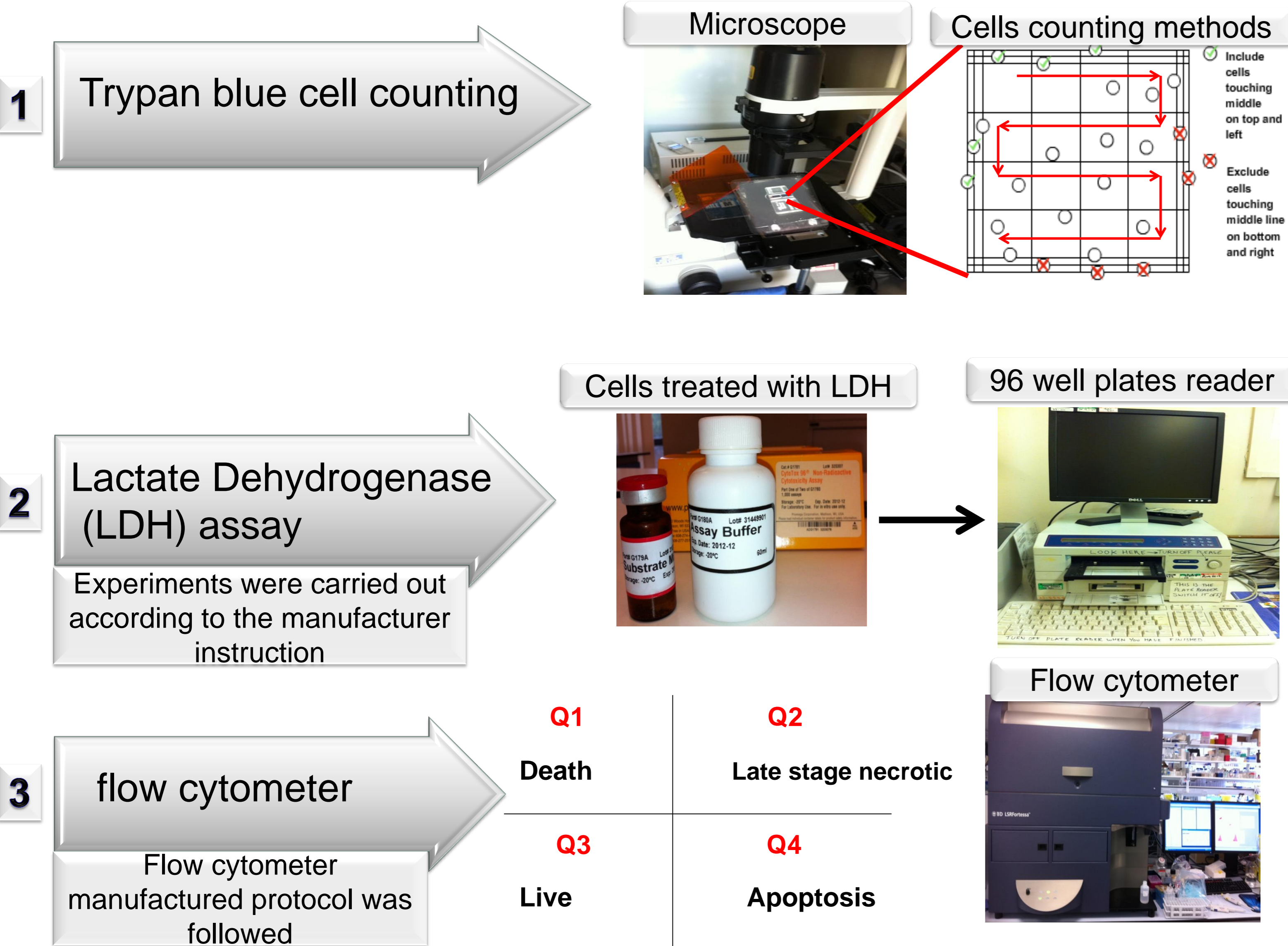
To evaluate the toxicity of antibiotics used for regenerative endodontic technique, both individually and in combination on pulp cell survival.

## MATERIAL AND METHODS

Human dental pulp cells were obtained from three different donors from tissue bank. Cells were grown in alpha minimum essential medium (a-MEM) & glutamine in humidified air supplemented with 5%CO<sub>2</sub> at 37°C until they reached sub-confluence. Cells were then detached by trypsin and counted using the haemocytometer, then 10<sup>5</sup> cells / cm<sup>2</sup> were seeded in 24 wells plate and incubated at 37°C, 5% CO<sub>2</sub> for 48 hours. Subsequently, cells were incubated with different antibiotic treatments (see treatment groups below) for 24 hours then the assessments were carried out using Three methods (see below: assessment methods)



## METHODS OF ASSESSMENT



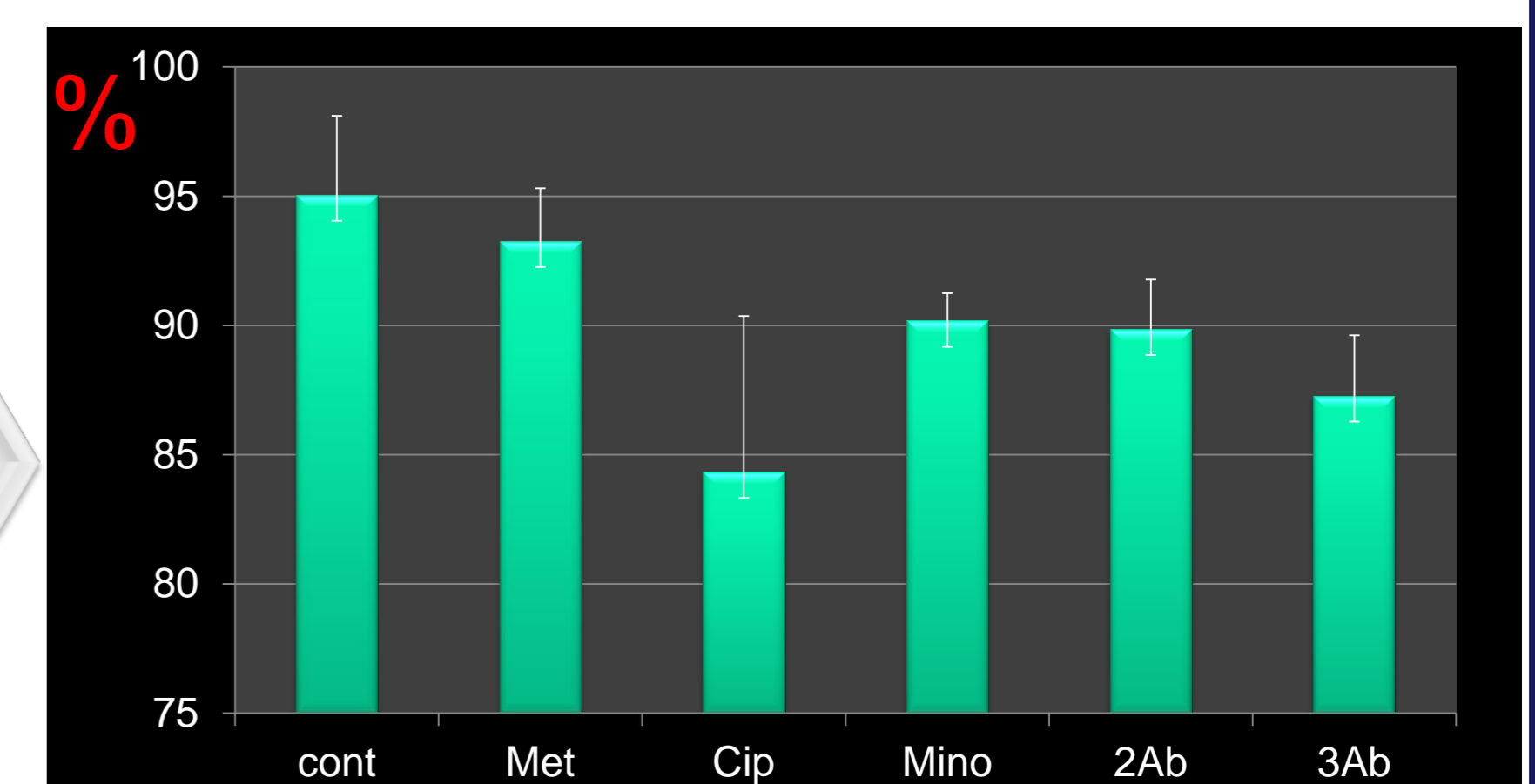
All experiments were repeated 3 times

## RESULTS

### Trypan blue cell counting

The percentage of cells survival after treatment application

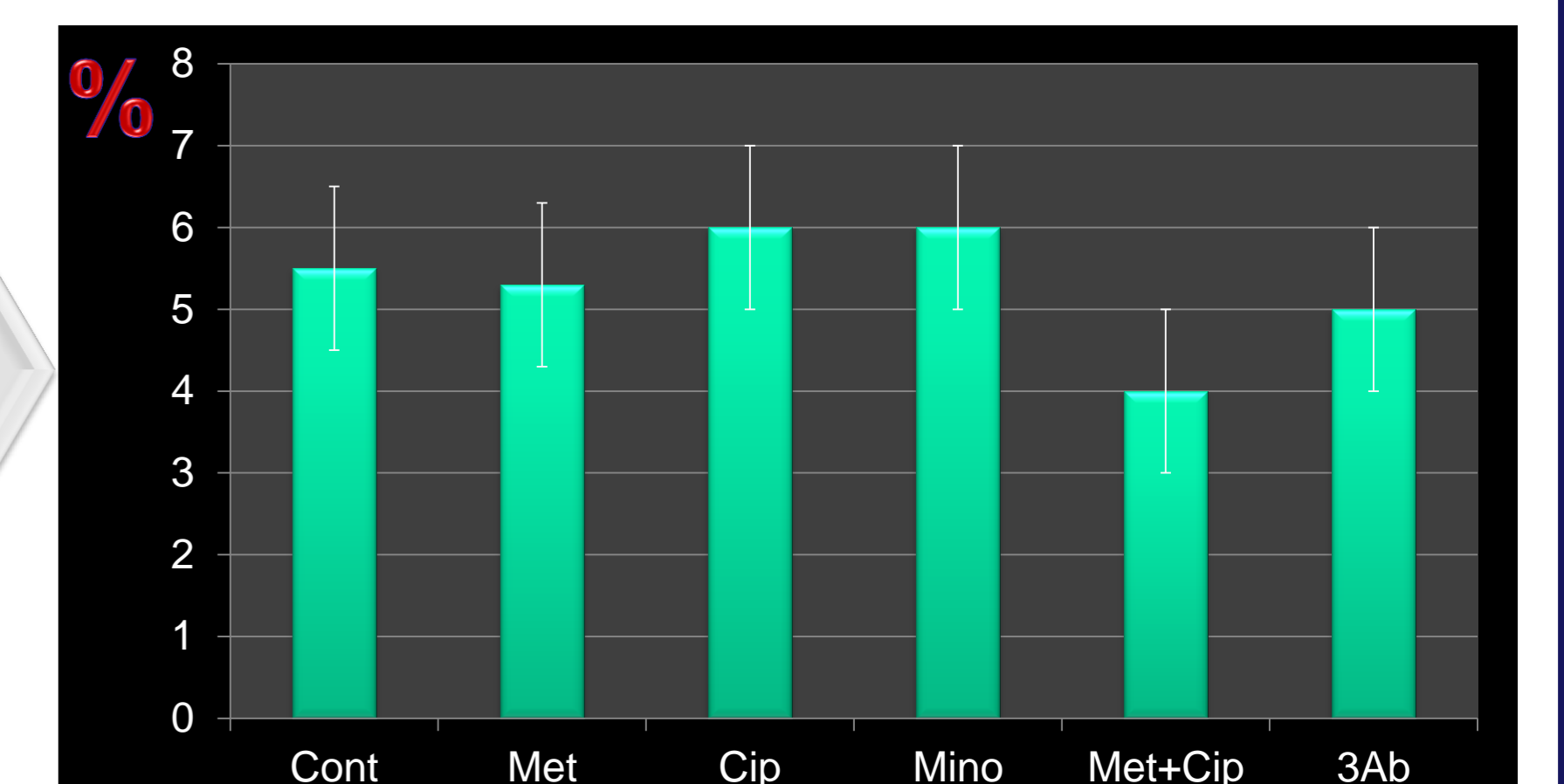
$$\%cells = \frac{\text{Live cells}}{\text{Live cells} + \text{Death cells}} \times 100$$



### Lactate Dehydrogenase (LDH) assay

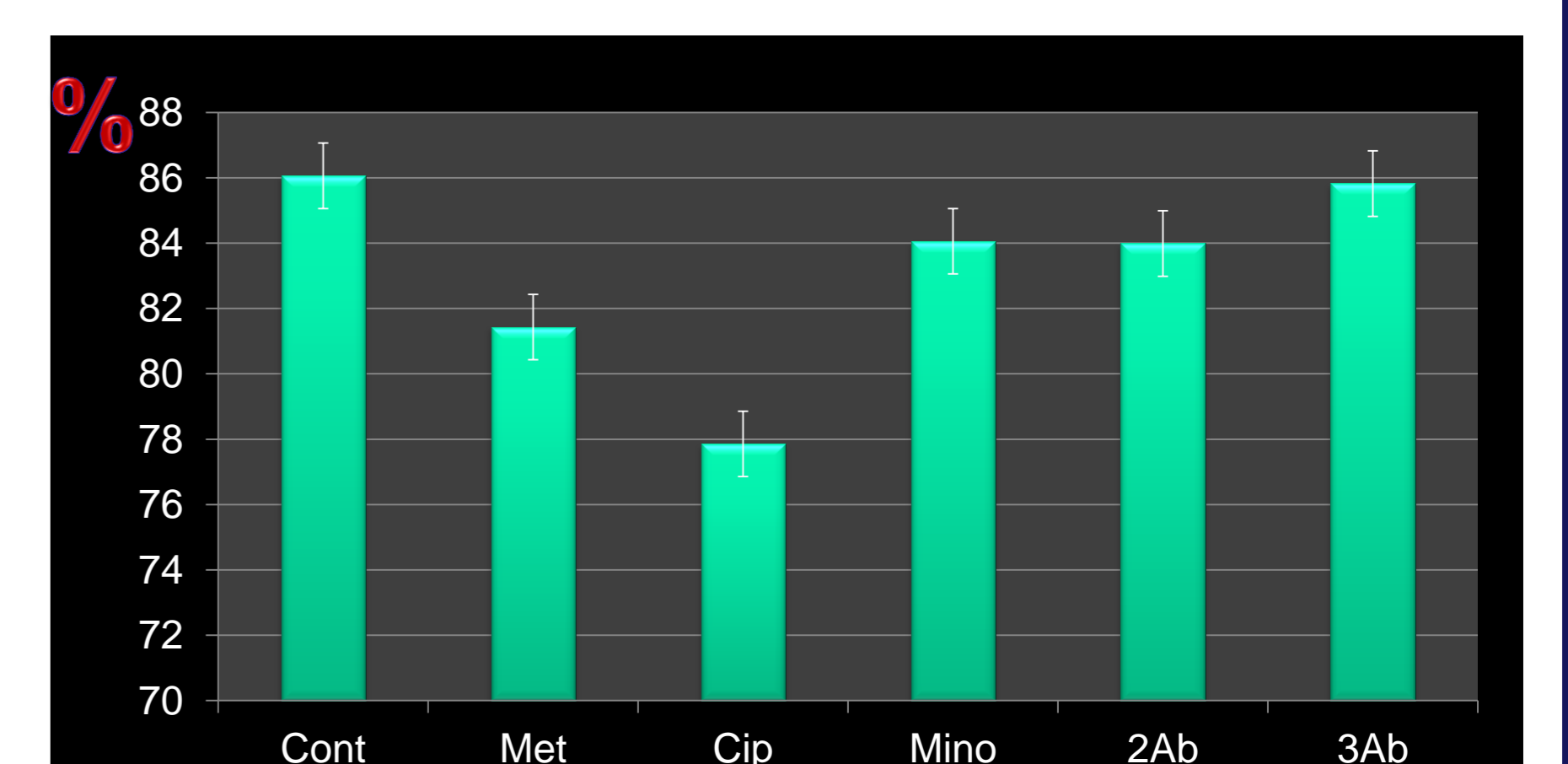
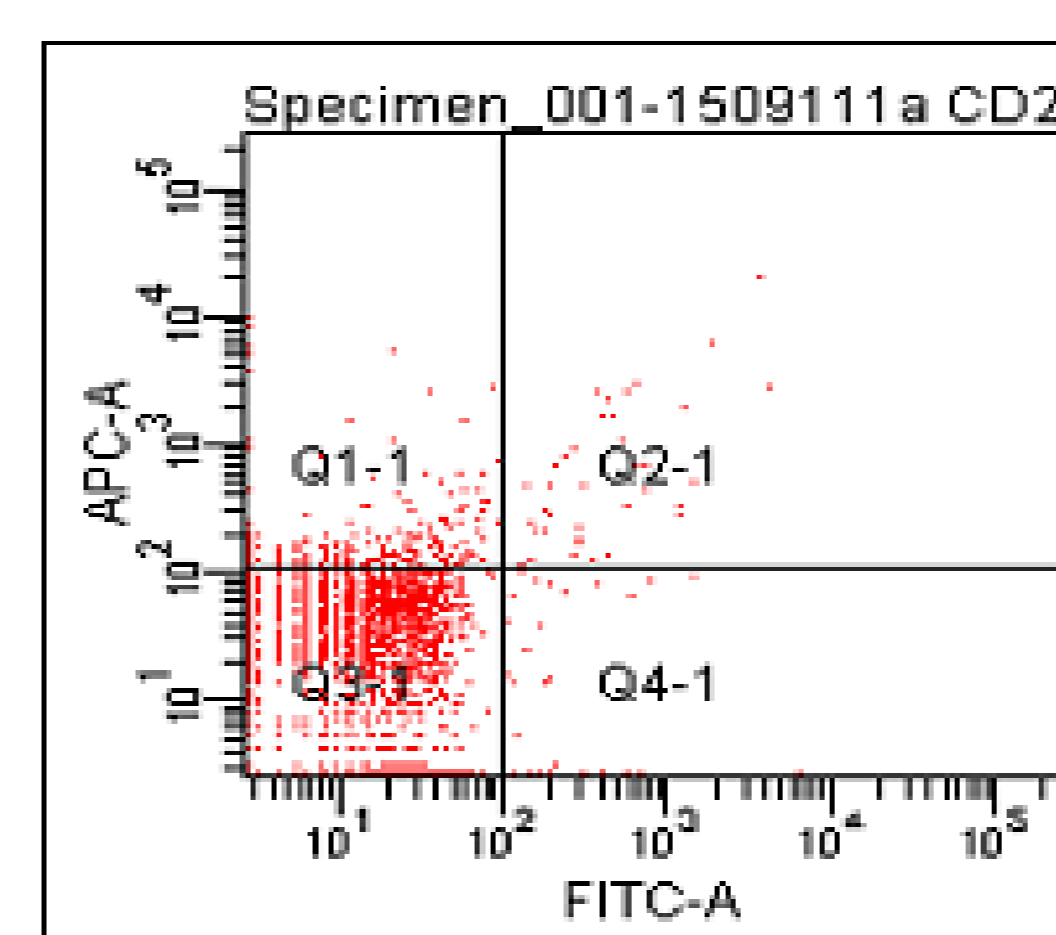
The percentage of Cytotoxicity after treatment application

$$\%Cytotoxicity = \frac{\text{Experimental LDH release}}{\text{Maximum LDH release}} \times 100$$



### flow cytometer

The percentage of cells survival after treatment application



## CONCLUSION

In the present study the application of antibiotics in combination had no significant effect on the survival of pulp cells. There was no difference between using two or three antibiotics. However, Ciprofloxacin alone seemed to affect pulp cell survival although this was not seen when it was used in combination.

## CLINICAL IMPLICATION

Ciprofloxacin alone seemed to significantly affect cell survival. However in combinations, antibiotics that are commonly used for Regenerative Endodontic Treatments, seem to have no adverse effect on the survival of pulp cells.

NB

Control group (Cont)

Ciprofloxacin (Cip)

2Ab (Met+Cip)

Metronidazol (Met)

Minocycline (Mino)

3Ab (Met+Cip+Mino)