

BLOOD CELL COUNT AFTER *IN VITRO* EXPOSURE AT FREQUENCIES OF 5G IN PIG

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INTRODUCTION

- Radiofrequency electromagnetic radiation (RF-EMR) can cause various non-thermal biological effects, for example, oxidative stress, altered gene expression, increased haemolysis, inducing permeability in the red blood cells membrane, decreasing sperm quality and changes in protein conformation.
- To authors knowledge, there is no available information about biological effects of RF-EMR from 5G frequencies in domestic animals, in particular on hematopoietic system.

AIM

- To determine the effects on standard analyses of blood cells after a short-term (2h) *in vitro* exposure of pig's blood samples at the operating frequency of 5G.

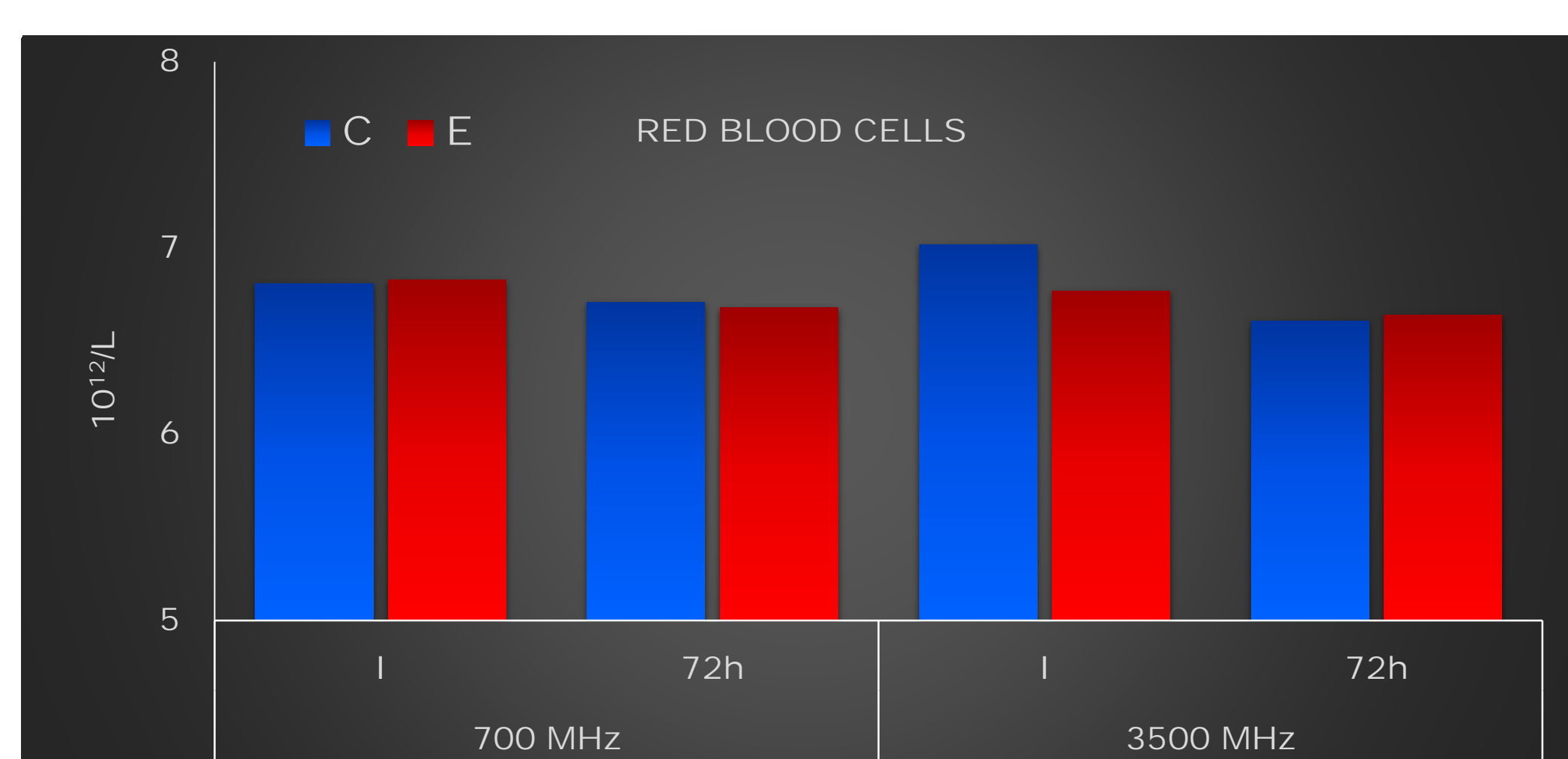
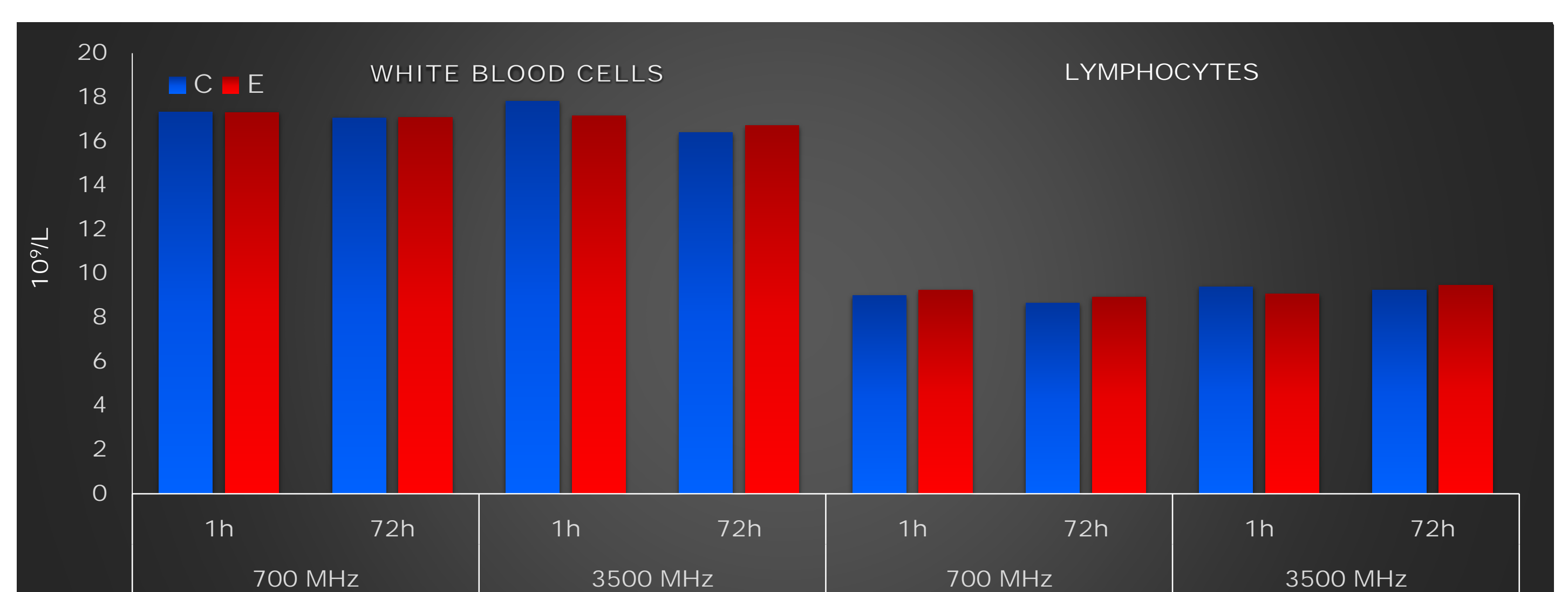
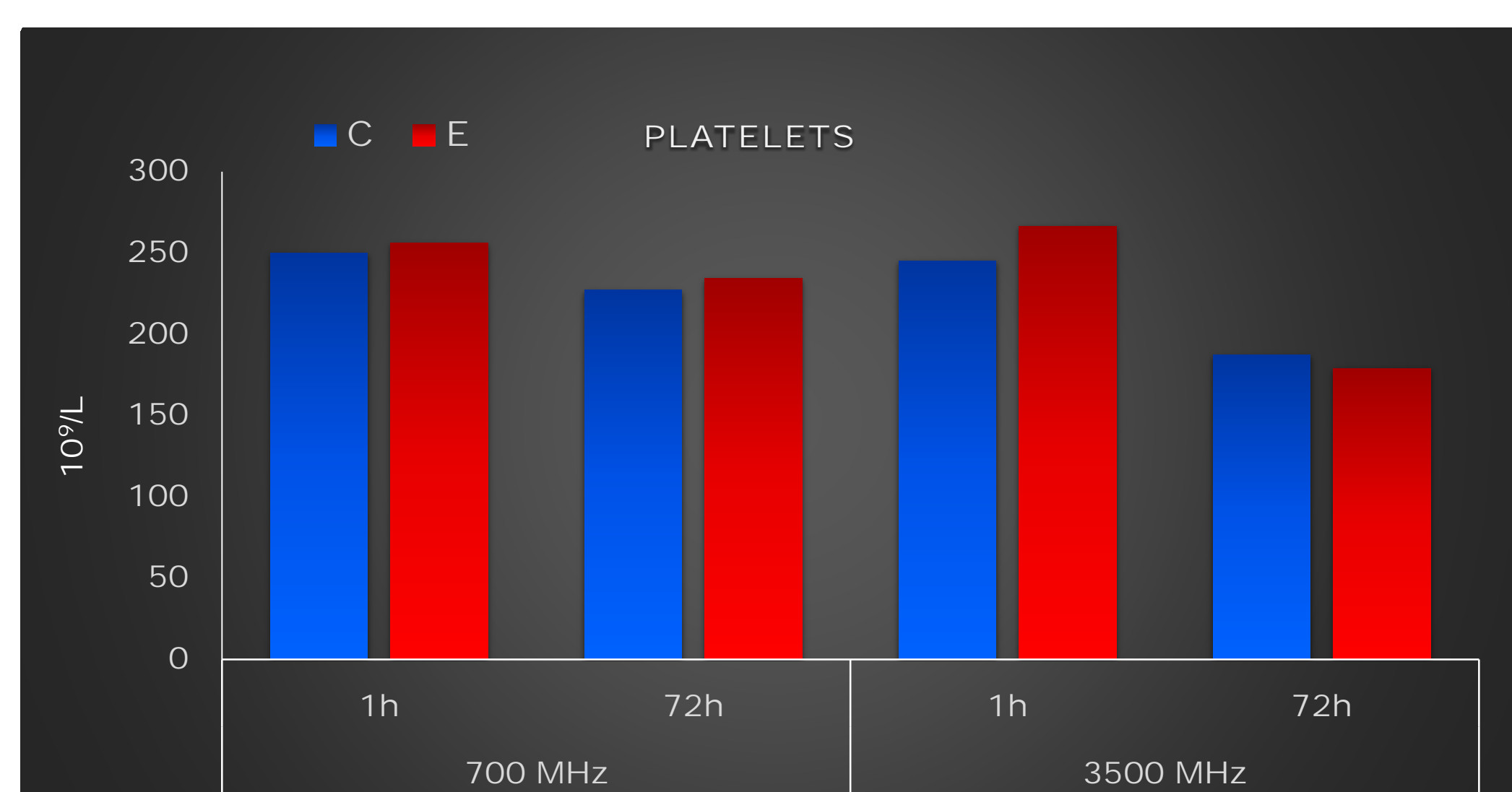
MATERIAL & METHODS

- Blood from 16 sows of the German Landrace breed was taken once from the *vena cava cranialis* into vacuum tubes with the addition of the EDTA anticoagulant.
- Blood of each animal was separated in four tubes, two of which served as a control (C), and the other two were experimental (E).
- The experimental blood samples were exposed to continuous RF-EMR at 700 MHz and 3.5 GHz using gigahertz transverse electromagnetic chamber for 2 hours and field level of 10 V m⁻¹.
- In all groups number of red blood cells, white blood cells, total number of platelets, number of lymphocytes as well as concentration of hemoglobin, mean corpuscular volume of erythrocytes per litre of blood and red blood cells indices were determined immediately (I) and 72 hours after exposure to RF-EMR.

	HGB (g/L) M±SE		HCT (L/L) M±SE		MCV (fL) M±SE		MCH (pg) M±SE		MCHC (g/L) M±SE	
	C	E	C	E	C	E	C	E	C	E
700 MHz (I)	128.3±11.59	128.3±11.15	0.48±0.04	0.48±0.04	71.03±5.26	71.70±5.0.2	19.01±1.43	18.93±1.43	267.44±8.65	264.93±7.90
700 MHz (72 h)	128.56±10.98	120.69±29.06	0.50±0.04	0.50±0.04	75.38±5.61	75.38±5.28	19.35±1.56	19.27±1.48	256.81±7.97	255.25±7.79
3500 MHz (I)	131.94±20.52	126.69±12.40	0.51±0.07	0.49±0.04	72.47±5.64	73.66±5.02	18.88±1.41	18.82±1.30	256.84±11.02	256.19±8.49
3500 MHz (72h)	123.75±11.21	125±11.81	0.51±0.04	0.51±0.05	77.31±5.14	77.31±5.62	18.78±1.35	18.99±10.37	243.31±1.35	246.06±10.27

RESULTS

- The results showed that RF-EMR at a frequency of 700 MHz and 3.5 GHz and field level of 10 Vm⁻¹ after a two-hour *in vitro* blood exposure did not cause a statistically significant change in the number of erythrocytes, leukocytes, lymphocytes, platelets and also did not affect statistically significant changes of erythrocyte indices in exposed samples, immediately, or 72 hours after exposure when compared to the control.



CONCLUSIONS

- RF-EMR at a frequency of 700 MHz and 3.5 GHz and field level of 10 Vm⁻¹ do not cause a change in the investigated blood parameters *in vitro* exposed pig blood.
- Results of this study could serve as a base for further investigations of the RF-EMR effects at a frequency of 5G, for example after longer exposure time, lower field levels, or a different design experiment (*in vivo*).