

Table 1 EMF responses blocked or lowered by calcium channel blockers

Ref. no.	EMF type	Calcium channel	Cell type or organism	Response measured
2	Pulsed magnetic fields	L-type	Human lymphocytes	Cell proliferation; cytokine production
3	Static magnetic field (0.1 T)	L-type	Human polymorphonuclear leucocytes	Cell migration; degranulation
✓ 5	ELF	L-type	Rat chromaffin cells	Differentiation; catecholamine release
6	Electric field	L-type	Rat and mouse bone cells	Increased Ca ²⁺ ; phospholipase A2, PGE2
✓ 7	50 Hz	L-type	Mytilus (mussel) immunocytes	Reduced shape change, cytotoxicity
✓ 8	50 Hz	L-type	AT20 D16V, mouse pituitary corticotrope-derived	Ca ²⁺ increase; cell morphology, premature differentiation
✓ 9	50 Hz	L-type	Neural stem/progenitor cells	<i>In vitro</i> differentiation, neurogenesis
10	Static magnetic field	L-type	Rat	Reduction in oedema formation
11	NMR	L-type	Tumour cells	Synergistic effect of EMF on anti-tumour drug toxicity
12	Static magnetic field	L-type	Myelomonocytic U937 cells	Ca ²⁺ influx into cells and anti-apoptotic effects
✓ 13	60 Hz	L-type	Mouse	Hyperalgesic response to exposure
14	Single nanosecond electric pulse	L-type	Bovine chromaffin cells	Very rapid increase in intracellular Ca ²⁺
15	Biphasic electric current	L-type	Human mesenchymal stromal cells	Osteoblast differentiation and cytokine production
16	DC & AC magnetic fields	L-type	β-cells of pancreas, patch clamped	Ca ²⁺ flux into cells
✓ 17	50 Hz	L-type	Rat pituitary cells	Ca ²⁺ flux into cells
✓ 18	50 Hz	L-type, N-type	Human neuroblastoma IMR32 and rat pituitary GH3 cells	Anti-apoptotic activity
19	Nanosecond pulse	L-type, N-type, P/Q-type	Bovine chromaffin cells	Ca ²⁺ dynamics of cells
✓ 20	50 Hz	Not determined	Rat dorsal root ganglion cells	Firing frequency of cells
21	700-1100 MHz	N-type	Stem cell derived neuronal cells	Ca ²⁺ dynamics of cells
22	Very weak electrical fields	T-type	Sharks	Detection of very weak magnetic fields in the ocean
23	Short electric pulses	L-type	Human eye	Effect on electro-oculogram
24	Weak static magnetic field	L-type	Rabbit	Baroreflex sensitivity
25	Weak electric fields	T-type	Neutrophils	Electrical and ion dynamics
26	Static electric fields, 'capacitive'	L-type	Bovine articular chondrocytes	Agrican & type II collagen expression; calcineurin and other Ca ²⁺ /calmodulin responses

EMF: electromagnetic field; ELF: extremely low frequency.

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