Claims

1. A treatment unit (3) having an inlet (3a) and an outlet (3b), and a treatment space (4) being formed inside the treatment unit (3) such that it can be penetrated by electric pulses, said treatment space (4) being fluidly connected with the inlet (3a) and the outlet (3b), **characterized in that** at least a portion of an inner side face of the treatment space (4) is non-planar, preferably curved, and wherein the inlet (3a) is formed in a top face of the treatment unit (3), and the outlet (3b) is formed in a bottom face of the treatment unit (3), wherein the flow of a fluid protruding through said treatment space (4) is homogenized in a zone where the electric field is applied.

2. The treatment unit (3) according to claim 1, **characterized in that** said inner side face of the treatment space (4) has a sinusoidal shape.

3. The treatment unit (3) according to any of the preceding claims, **characterized in that** the treatment space (4) has a cuboid shape, with its top face being fluidly connected with the inlet (3a) and its bottom face being fluidly connected with the outlet (3b).

4. The treatment unit (3) according to claim 3, **characterized in that** at least one, preferably two side faces of the cuboid treatment space (4) have a curved, preferably sinusoidal shape over the entire height.

5. The treatment unit (3) according to any of the preceding claims, **characterized in that** in the region of the treatment space (4) there are provided means (5a, 5b) for

positioning electrodes (2a, 2b) for providing said electric pulses to the treatment space (4).

6. The treatment unit (3) according to claim 5, **characterized in that** the means (5a, 5b) are blind bores in side faces of the treatment unit (3), preferably being tapered from the outside to the inside end.

7. The treatment unit (3) according to claim 5 or 6, **characterized in that** the inner face of the blind bores comprises a slit (6), which preferably is arranged in the centre of the inner face.

8. The treatment unit (3) according to any of claims 5 to 7, **characterized in that** the blind bores project towards plain side faces of the treatment space (4).

9. A device (1), comprising a unit (2) for generating and emitting electric pulses, **characterized in that** said device (1) comprises a treatment unit (3) according to any of claims 1 to 8.

10. The device according to claim 9, **characterized in that** the unit (2) for generating and emitting electric pulses comprises two or more electrodes (2a, 2b) or plates of a capacitor and can generate electric field strength pulses, so that a voltage increase take place between the two or more electrodes (2a, 2b) of 10% to 90% of a target voltage of the electric field strength pulses within a period of 0.1 to 1000 ns, the electric field strength pulses have a pulse duration of 5 ns to 50000 ns, and the electric field strength pulses, upon reaching the target voltage, have an electric field strength of 0.5 kV/cm to 100 kV/cm.

11. A method for treating cells for targeted inactivation, the extraction of bioactive compounds, and the stimulation of cell growth and/or cellular compounds, performed in a device (1) according to any one of claims 9 to 10, comprising the steps

a) introducing cell material through an inlet (3a) of the treatment unit (3) into the treatment space (4),

b) applying electric pulses to a treatment space (4) in a treatment unit (3),

c) passing of the cell material through the treatment space (4) and the electric pulses penetrating the treatment space (4) to an outlet (3b) of the treatment unit (3).

12. The method according to claim 11, **characterized in that** the cell material is provided as a suspension in an electrically conductive liquid.

13. The method according to any one of claims 11 to 12, **characterized in that** an electric field is applied with such electric field strength pulses, so that a voltage increase takes place between the two electrodes (2a, 2b) or plates of a capacitor of 10% to 90% of a target voltage of the electric field strength pulses within a period of 0.1 to 1000 ns, the electric field strength pulses have a pulse duration of 5 ns to 50000 ns, and the electric field strength pulses, upon reaching the target voltage, have an electric field strength of 0.5 kV/cm to 100 kV/cm.