Title: LOW- AND MID-FREQUENCY ULTRASOUND DEVICE WITH ENHANCED CAVITATION EFFECT IN COMBINATION WITH RADIAL IN-DEPTH SKIN THERAPY

Abstract: The invention relates to a device for treatment of subcutaneous fat cells, specifically to a device that uses low- and mid-frequency ultrasound waves in combination with radial deep skin therapy. A low- and mid-frequency focused ultrasound device for cavitation in combination with radial deep therapy that comprises a handle (1), a fastening ring (3), a bell-shaped housing (2), an ultrasound source and a vacuum pump, characterized in that low-frequency ultrasound cavitation therapy is performed simultaneously with vacuum therapy with a skin fold, and additionally characterized in that excess gel is removed via a filtration system in the handle.
Claim 1. A low- and mid-frequency ultrasound device for cavitation in combination with radial deep skin therapy which comprises a handle (1), a fastening ring (3), a bell-shaped housing (2), an ultrasound source (5) in a cone-shaped housing (4), and a vacuum pump; said device being adapted to perform low-frequency ultrasound cavitation therapy and vacuum therapy with a skin fold simultaneously;

characterized in that,

upon operation, excess gel is removed via a filtration system in the handle, wherein the space between said handle (1) and said cone-shaped housing (4) serves as a filter-reservoir for absorbed ultrasound gel.

Claim 2. The device according to claim 1, characterized in that the handle (1) is approximately oval in shape and can slightly widen in its lower part (1a), which is followed by a narrower ring-shaped part (1b) with engraved threads, that the top of handle (1) has a round opening (1d) for the cables of the ultrasound head and an opening (1e) for the tube of the vacuum pump, that there is a round hole (1c) in the upper part of the handle for a plug that can be used to apply air for easier device removal (decompress interior) at the end of the therapy, that the bell-shaped housing (2) is fastened to the narrow part (1b) using the inner thread of the fastening ring (3), that the bell-shaped housing (2) contains a cone-shaped housing (4) of the ultrasound head (5), which is screwed to the handle (1) using the thread (4a), that the housing (4) consists of a cylindrical part (4a) with engraved threads, a cylindrical part (4b) with a ring-shaped part (4c), which continues into truncated cone-shaped part (4d), that there is a ring-shaped part (4e) between parts (4d and 4f), that part (4f) is shaped like a truncated cone and ends with a cylindrical part (4g) with threads where the lid (6) is screwed after attaching the ultrasound head (5), that the ultrasound head (5) is built into the bell-shaped housing (2) in such a way that the therapeutic part (5a) reaches up to approximately one third of the height of the bell-shaped housing (2), that there is a space between part (4) and the handle (1) which serves as a filtration reservoir for impurities, especially excess ultrasound gel, that the housing (4) is divided into three segments using rings (4c and 4e), which keeps the gel from entering the interior of the device.

Claim 3. The device according to claims 1 and 2, characterized in that handle (1) has built-in tubes for ultrasound gel application during therapy.
4. The device according to claim 3, characterized in that the gel is applied using a pump.

5. The device according to claims 1 to 4, characterized in that several ultrasound sources are used, that these sources can be time- or phase-shifted, that the sources can operate at the same frequency or at different frequencies, that one or more sources can operate in pulsed, continuous or modulated modes.

6. The device according to claims 1 to 5, characterized in that handle (1) includes one or more radiofrequency wave sources that allow deep tissue heating or radiofrequency ablation.

7. The device according to claims 1 to 6, characterized in that it includes an electronic circuit for estimation of tissue depth and composition using a diagnostic ultrasound source.

8. The device according to claims 1 to 7, characterized in that the bell-shaped housing (2) is shaped in such a way that the bottom side is oval.

9. The device according to claims 1 to 8, characterized in that the ultrasound source is built into the bell-shaped housing (2) in combination with one or more balls, rollers, heating or cooling devices, electrical signal sources and/or sources of coherent or non-coherent light; that sources of light include materials that reflect light.

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