CLAIMS

1. A dissolvable microneedle comprising needles (101) made of a water-soluble material assembled on one side of a base (102), which is a sheet material having liquid-permeable cavities, wherein the needles (101) being assembled to the base (102) such that bottom portion of the needles (101) is directly connected to the base (102), the connection of the bottom portion of the needles (101) to the base (102) forming through a structure in which the bottom portion of the needles (101) penetrates into the base (102), occupying some or all cavities of the base (102), wherein a penetrating structure that connects the needles (101) to the base (102) and is located inside the base (102) is dissolved upon wetting the base (102), allowing the base (102) to be removed from skin while the needles (101) remains embedded in the skin.
2. The dissolvable microneedle according to claim 1, wherein the bottom portion of the needles (101) penetrates into all cavities in the surface region of the base (102) on the side where the needles (101) are assembled, with partial needle penetration into the cavities inside the base (102).
3. The dissolvable microneedle according to claim 1, wherein the bottom portion of the needles (101) penetrates into some cavities in the surface region of the base (102), on the side where the needles (101) are assembled, with partial needle penetration into the cavities inside the base (102).
4. The dissolvable microneedle according to claim 1, wherein the bottom portion of the needles (101) penetrates into all cavities of the base (102), in both the cavities in the surface region of the base (102) on the side where the needles (101) are assembled and the cavities inside the base (102).
5. The dissolvable microneedle according to any one of claims 1-4, wherein the base (102) is made of materials selected from woven patch, non-woven patch, polymer patch having liquid-permeable cavities, synthetic fabric patch, natural fabric patch, paper patch and a combination thereof.
6. The dissolvable microneedle according to claim 5, wherein the woven patch is a synthetic or natural fabric patch, the non-woven patch is a paper patch, and the polymer patch having liquid-permeable cavities is an open-cell-sponge patch or porous hydrophilic polymer patch.

7. The dissolvable microneedle according to any one of claims 1-6, wherein the base (102) has a thickness ranging from 5 to 10,000 microns, preferably from 100 to 5,000 microns, and more preferably from 100 to 3,000 microns.
8. The dissolvable microneedle according to any one of claims 1-4, wherein the needles (101) are made of a cross-linked or non-cross-linked, bio-absorbable and bio-compatible polymer material, preferably hyaluronic acid, polyvinylpyrrolidone, polyvinyl alcohol, silkworm sericin, collagen, bio-absorbable sugar or a combination thereof.
9. The dissolvable microneedle according to claim 8, wherein the needles (101) are made of a material comprising hyaluronic acid in an amount of 30-60% by weight.
10. The dissolvable microneedle according to claim 9, wherein the needles (101) are made of a material further comprising components selected from polyvinylpyrrolidone, polyvinyl alcohol, silkworm sericin, collagen, maltose, galactose, glucose, sucrose, fructose, xylose, xylitol and a combination thereof.
11. The dissolvable microneedle according to any one of claims 1-10, wherein the needles (101) have a hook shape at the tip portion of the needles (101) and/or on a side portion of the needles (101).
12. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain viable cells in an amount of 10 to 1,000,000 cells per square centimeter of a needle array.
13. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain a vaccine together with a vaccine adjuvant.
14. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain an active agent that is a vitamin, drug, RNA, DNA, natural extract, peptide or a combination thereof.
15. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain Botulinum toxin A in an amount of 1 unit to 50,000 units per square centimeter of a needle array.
16. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain melanocytes in an amount of 100 to 1,000,000 cells per square centimeter of a needle array.

17. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain cancer cells in an amount of 100 to 1,000,000 cells per square centimeter of a needle array.
18. The dissolvable microneedle according to any one of claims 1-11, wherein the needles (101) contain stem cells in an amount of 100 to 1,000,000 cells per square centimeter of a needle array.