WHAT IS CLAIMED IS:

1. A medical device, comprising:

an array of microneedles, and

a coating disposed on the microneedles,

wherein the coating comprises:

a local anesthetic selected from the group consisting of lidocaine, prilocaine, and a combination thereof; and

a local anesthetic dose-extending component selected from the group consisting of alpha 1 adrenergic agonists, alpha 2 adrenergic agonists, and a combination thereof;

wherein the local anesthetic is present in an amount of at least 1 wt-% based upon total weight of solids in the coating, and

wherein the dose-extending component/local anesthetic weight ratio is at least 0.0001.

~~2. A method of extending a topically-delivered local anesthetic dose in mammalian tissue, the method comprising:~~

~~contacting the tissue with a local anesthetic-coated microneedle device,~~

~~wherein the device comprises:~~

~~an array of microneedles, and~~

~~a coating disposed on the microneedles,~~

~~wherein the coating comprises:~~

~~a local anesthetic selected from the group consisting of lidocaine, prilocaine, and a combination thereof; and~~

~~a local anesthetic dose-extending component selected from the group consisting of alpha 1 adrenergic agonists, alpha 2 adrenergic agonists, and a combination thereof;~~

~~wherein the local anesthetic is present in an amount of at least 1 wt-% based upon total weight of solids in the coating, and~~

~~wherein the dose-extending component/local anesthetic weight ratio is at least 0.0001.~~

~~3~~2. A method of making a local anesthetic-coated microneedle device comprising:

providing an array of microneedles,

providing a composition comprising:

a local anesthetic selected from the group consisting of lidocaine, prilocaine, and a combination thereof;

a local anesthetic dose-extending component selected from the group consisting of alpha 1 adrenergic agonists, alpha 2 adrenergic agonists, and a combination thereof; and

a volatilizable carrier;

wherein the dose-extending component/local anesthetic weight ratio is at least 0.0001;

contacting the microneedles with the composition, and

volatilizing at least a portion of the carrier to provide a coating disposed on the microneedles;

wherein the coating comprises the local anesthetic in an amount of at least 1 wt-% based upon total weight of solids in the coating; and

wherein the device comprises the array of microneedles with the coating disposed on the microneedles.

~~4~~3. The method of claim ~~3~~2, wherein the microneedles each have a tip and a base, the tip extending a distance from the base, and contacting is carried out by contacting the tips of the microneedles and a portion of the microneedles extending not more than 90 percent of the distance from the tips to the bases with the composition.

~~5~~4. The device of claim 1 or the method of any one of claims 2~~,~~ ~~3,~~ and ~~3~~4, wherein the coating further comprises at least one excipient.

~~6~~5. The device of claim ~~5~~ ~~4~~ or the method of claim ~~5~~4, wherein the coating comprises 10 to 75 wt-% of the at least one excipient, based upon total weight of solids in the coating.

~~7~~6. The device of claim ~~5~~ 4 or claim ~~6~~ 5 or the method of claim ~~5~~ 4 or claim ~~6~~5, wherein the at least one excipient is selected from the group consisting of sucrose, dextrins, dextrans, hyroxyethyl cellulose (HEC), polyvinyl pyrrolidone (PVP), polyethylene glycols, amino acids, peptides, polysorbate, human serum albumin, saccharin sodium dihydrate, and a combination thereof.

~~8~~7. The device of claim ~~5~~ 4 or claim ~~6~~ 5 or the method of claim ~~5~~ 4 or claim ~~6~~5, wherein the at least one excipient is a saccharide.

~~9~~8. The device of claim ~~8~~ 7 or the method of claim ~~8~~7, wherein the saccharide is selected from the group consisting of dextran, sucrose, trehalose, and a combination thereof.

~~10~~9. The device of any one of claims 1 and ~~5~~ 4 through ~~9~~ 8 or the method of any one of claims 2 through ~~9~~8, wherein the coating comprises 20 to 90 wt-% local anesthetic, based upon total weight of solids in the coating.

~~11~~10. The device of any one of claims 1 and ~~5~~ 4 through ~~10~~ 9 or the method of any one of claims 2 through ~~10~~9, wherein the coating comprises 0.06 to 9 wt-% local anesthetic dose-extending component based upon total weight of solids in the coating.

~~12~~11. The device of any one of claims 1 and ~~5~~ 4 through ~~11~~ 10 or the method of any one of claims 2 through ~~11~~ 10 , wherein the local anesthetic dose-extending component is selected from the group consisting of clonidine, apraclonidine, brimonidine, detomidine, dexmedetomidine, fadolmidine, guanfacine, guanabenz, guanoxabenz, amitraz, guanethidine, lofexidine, methyldopa, medetomidine, romifidine, tizanidine, tolonidine, xylazine, cirazoline, etilefrine, metaraminol, methoxamine, methylnorepinephrine, midodrine, modafmil, noradrenaline, phenylephrine, tetrahydrozoline, xylometazoline, oxymetazoline, amidephrine, anisodamine, epinephrine, ergotamine, indanidine, mivazerol, naphazoline, octopamine, rilmenidine, synephrine, talipexole, and a combination thereof.

~~13~~12. The device of any one of claims 1 and ~~5~~ 4 through ~~12~~ 11 or the method of any one of claims 2 through ~~12~~11, wherein the local anesthetic dose-extending component is selected from the group consisting of clonidine, apraclonidine, brimonidine, detomidine, dexmedetomidine, guanfacine, guanabenz, amitraz, guanethidine, lofexidine, methyldopa, tizanidine, etilefrine, metaraminol, methoxamine, methylnorepinephrine, midodrine, modafmil, noradrenaline, phenylephrine, tetrahydrozoline, xylometazoline, oxymetazoline, amidephrine, anisodamine, epinephrine, ergotamine, indanidine, mivazerol, naphazoline, octopamine, rilmenidine, talipexole, and a combination thereof.

~~14~~13. The device of any one of claims 1 and ~~5~~ 4 through ~~11~~ 10 or the method of any one of claims 2 through ~~11~~10, wherein the local anesthetic dose-extending component is an alpha 2 adrenergic agonist.

~~15~~14. The device of any one of claims 1 and ~~5~~ 4 through ~~14~~ 13 or the method of any one of claims 2 through ~~14~~13, wherein the local anesthetic dose-extending component is clonidine, apraclonidine, guanfacine or a combination thereof.

~~16~~15. The device of any one of claims 1 and ~~5~~ 4 through ~~15~~ 14 or the method of any one of claims 2 through ~~15~~14, wherein the coating is present on the microneedles in an average amount of 0.01 to 2 micrograms per microneedle.

~~17~~16. The device of any one of claims 1 and ~~5~~ 4 through ~~16~~ 15 or the method of any one of claims 2 through ~~16~~15, wherein the microneedles have a height of 200 to 1000 micrometers.

~~18~~17. The device of claim ~~17~~ 16 or the method of claim ~~17~~16, wherein at least 50 % of the microneedles have the coating present on the microneedles near the tip and extending not more than 50 percent of the distance toward the base.

~~19~~18. A medical device, comprising an array of dissolvable microneedles, the microneedles comprising:
a dissolvable matrix material;