WHAT IS CLAIMED IS:

1. Use of a topical formulation in the manufacture of a medicament for treatment and/or prevention of autoimmune diseases selected from vitiligo, atopic dermatitis, psoriasis, epidermolysis bullosa acquista, pemphigus vulgaris, IgA-mediated bullous dermatoses, systemic lupus erythematosus, ~~alopecia areata,~~ porphyria, scleroderma, rheumatoid arthritis, multiple sclerosis, and skin complication of Type I diabetes, wherein the ~~a~~ topical formulation comprises:

   (a) a therapeutically effective amount of tofacitinib;

   (b) at least one solvent comprising dimethyl sulfoxide (DMSO); and

   (c) optionally one or more other pharmaceutically acceptable excipients.

2. The use of claim 1, wherein tofacitinib is to be administered to the skin at a daily therapeutically effective dose of 0.5 mg/cm^2 to 60 mg/cm^2.

3. The use of claim 1, wherein the topical formulation is in the form selected from the group consisting of a solution, a suspension, a cream, an ointment, a lotion and a gel.

4. The use of claim 1, wherein the topical formulation is in the form selected from a solution and a gel.

5. The use of claim 1, wherein said tofacitinib is in the form of a pharmaceutically acceptable salt selected from citrate salt, hydrochloride salt, hydrobromide salt, oxalate salt, nitrate salt, sulfate salt, phosphate salt, fumarate salt, succinate salt, maleate salt,

besylate salt, tosylate salt, palmitate salt and tartrate salt.

6. The use of claim 5, wherein said pharmaceutically acceptable salt is citrate salt.

7. The use of claim 1, wherein said solvent is a combination of dimethyl sulfoxide with at least one of propylene glycol, ethanol, and water.

8. The use of claim 1, wherein said pharmaceutically acceptable excipient is selected from the group consisting of a thickening agent, a stabilizer, an antioxidant, a chelating agent, an oily material, an emulsifier, a penetration enhancer, a pH adjusting agent, a preservative, an antimicrobial agent, an opacifier, a fragrance, a colorant, a gelling agent, a moisturizer, a surfactant, and a combination thereof.

9. The use of claim 1, wherein said pharmaceutically acceptable excipient is a thickening agent.

10. The use of claim 9, wherein said thickening agent is selected from the group consisting of a cellulose derivative, polyvinylpyrrolidone, a carbomer polymer, carbomer derivative, maltodextrin, polydextrose, dextrates, carboxypolymethylene, polyvinyl alcohol, poloxamers, polyethylene glycols and mixtures thereof.

11. The use of claim 1, wherein when the formulation is applied to the skin of a subject, the amount of tofacitinib retained in the skin is more than that penetrating through the skin into the blood or systemic circulation, for 4 hours after the application.

12. The use of claim 1, wherein when the formulation is applied to the skin of a subject, the

amount of tofacitinib retained in the skin is at least about 4.7 times more than that penetrating through the skin into the blood or systemic circulation, for 8 hours after the application.

13. The use of claim 1, wherein less than 2% of total degradation products are observed after stored at room temperature for at least 1 month.

14. Use of a topical formulation in the manufacture of a medicament for treatment and/or prevention of autoimmune diseases selected from vitiligo, atopic dermatitis, psoriasis, epidermolysis bullosa acquista, pemphigus vulgaris, IgA-mediated bullous dermatoses, systemic lupus erythematosus, ~~alopecia areata,~~ porphyria, scleroderma, rheumatoid arthritis, multiple sclerosis, and skin complication of Type I diabetes, wherein the topical formulation comprises:

(a) a therapeutically effective amount of tofacitinib citrate;

(b) dimethyl sulfoxide;

(c) optionally, propylene glycol;

(d) optionally, a thickening agent;

(e) optionally, an antioxidant; and

(f) optionally, one or more other pharmaceutically acceptable excipients.

15. The use of claim 14, comprising:

(a) 0.1% w/w to 5% w/w of tofacitinib citrate;

(b) 1% w/w to 80% w/w of dimethyl sulfoxide;

(c) optionally, 10% w/w to 60% w/w of propylene glycol;

(d) optionally, 0.05% w/w to 5% w/w of hydroxypropyl cellulose;

(e) optionally, 0.05% w/w to 5% w/w of butylated hydroxyanisole; and

(f) optionally, one or more other pharmaceutically acceptable excipients,

based on the total weight of the topical formulation.