WHAT IS CLAIMED IS:

1. Use of a C_1-C_4 alkyl ester azelate in the manufacture of a pharmaceutical composition formulated for buccal delivery for treating or preventing a dyslipidemia or a disease or condition associated with a dyslipidemia in a subject, the pharmaceutical composition comprising a C_1-C_4 alkyl ester azelate in an amount effective to treat or prevent the dyslipidemia, or a disease or condition associated with a dyslipidemia in the subject, and a buccally acceptable carrier.

2. The use of claim 1, wherein the pharmaceutical composition comprises a C_1-C_4 alkyl ester azelate in an amount effective to improve one or more abnormal lipid levels in the subject.

3. The use of claims 1-2, wherein the pharmaceutical composition comprises a C_1-C_4 alkyl ester azelate in an amount effective to lower an elevated low density lipoprotein (LDL) level, elevate a diminished high density lipoprotein (HDL) level, lower an elevated triglyceride level, lower an elevated total cholesterol to HDL ratio (cholesterol/HDL), lower an elevated LDL-to-HDL ratio (LDL/HDL), lower an elevated LDL-to-triglyceride ratio (LDL/triglyceride), or lower an elevated non-cholesterol HDL-to-HDL ratio (non-cholesterol HDL/HDL) in the subject.

4. The use of claims 1-3, wherein the dyslipidemia or disease or condition associated with the dyslipidemia comprises one or more of the following: hyperlipidemia, hypertriglyceridemia, hypercholesterolemia, mixed hyperlipidemia, familial combined hyperlipidemia, lipodystrophy, cardiovascular disease, hypertension, stroke, atherosclerosis, arteriosclerosis, coronary artery disease, NASH, ASH, fatty liver disease, NAFLD, hepatomegaly, pancreatitis, metabolic syndrome, insulin resistance, prediabetes, type II diabetes, overweight, and obesity.

5. The use of claims 1-4, wherein the pharmaceutical composition comprises a C_1-C_4 alkyl ester azelate selected from the group consisting of diethyl azelate (DEA), dimethyl azelate (DMA), di-isopropyl azelate (DiPA), and di-isobutyl azelate (DiBuA).

6. The use of claims 1-5, wherein the pharmaceutical composition comprises a dosage of the C_1-C_4 alkyl ester azelate in a range from 0.1 mg/kg/day to 10 mg/kg/day**.**

7. The use of claims 1-6, wherein the pharmaceutical composition comprises a dosage of the C_1-C_4 alkyl ester azelate in a range from 0.25 mg/kg/day to 2.0 mg/kg/day

8. The use of claims 1-7, wherein the pharmaceutical composition comprises DEA.

9. The use of claims 1-8 wherein the pharmaceutical composition comprises a dosage of DEA of about 0.1 mg/kg/day, about 0.25 mg/kg/day, about 0.5 mg/kg/day, about 1 mg/kg/day, about 2 mg/kg/day, or about 4 mg/kg/day.

10. The use of claim 1, wherein the subject has; is suspected of having; or is suspected of having a predisposition to acquiring; at least one of insulin resistance, prediabetes, type II diabetes, overweight, or obesity.

11. The use of claim 1, wherein the subject has a body mass index (BMI) from 25 to less than 30 or has a BMI of 30 or greater.

12. The use of claims 1-11, wherein the pharmaceutical composition is to be administered separately or co-administered with a second pharmaceutical composition comprising a second active ingredient other than the C_1-C_4 alkyl ester azelate in the first pharmaceutical composition.

13. The use of claim 12, wherein the second active ingredient comprises one or more of the following: a C_1-C_4 alkyl ester azelate other than DEA, a biguanide, metformin, buformin, phenformin, a thiazolidinedione, pioglitazone, rosiglitazone, a corticosteroid, prednisone, an insulin, a lipase inhibitor, orlistat, a glucagonlike peptide-1 (GLP-1) agonist, an exendin,

exenatide, liraglutide, lixisenatide, albiglutide, dulaglutide, semaglutide, an HMG-CoA reductase inhibitor, a statin, atorvastatin, fluvastatin, lovastatin, pitavastatin, pravastatin, rusovastatin, simvastatin, a fibrate, gemfibrozil, fenofibrate, niacin, a leptin, a leptin agonist, metreleptin, an amylin agonist, pramlintide, and combinations thereof.

14. The use of claim 13, wherein the second pharmaceutical composition comprises insulin and is formulated as a rapid-acting formulation, an intermediate-acting formulation, a long-acting formulation, or combinations thereof.

15. The use of claims 1-14, wherein the pharmaceutical composition consists essentially of DEA as active ingredient

16. The use of claims 1-14, wherein the pharmaceutical composition consists of DEA as active ingredient.

17. A pharmaceutical composition comprising a C_1-C_4 alkyl ester azelate and a buccally acceptable carrier, the composition formulated for buccal delivery, wherein the C_1-C_4 alkyl ester azelate is at a dose in a range from 0.25 mg/kg to 2.0 mg/kg.

18. The pharmaceutical composition of claim 17, wherein the C_1-C_4 alkyl ester azelate is selected from the group consisting of DEA, DMA, DiPA, and DiBuA.

19. The pharmaceutical composition of claims 17 or 18, wherein the C_1-C_4 alkyl ester azelate is DEA.

20. The pharmaceutical composition of claims 17-19, wherein the dose is effective for improving one or more abnormal lipid levels when administered to a subject.

21. The pharmaceutical composition of claims 17-19, wherein the dose is effective for lowering an elevated LDL level, elevating a diminished HDL level, lowering an elevated triglyceride level, lowering an elevated cholesterol/HDL, lowering an elevated LDL/HDL, lowering an elevated LDL/triglyceride, or lowering an elevated non-cholesterol HDL/HDL when administered to a subject.

22. The pharmaceutical composition of claims 17-21, wherein the dose is effective for treating or preventing a dyslipidemia, or a disease or condition associated with a dyslipidemia, when administered to a subject.

23. The pharmaceutical composition of claims 17-22, wherein the disease or condition associated with dyslipidemia is selected from the group consisting of hyperlipidemia, hypertriglyceridemia, hypercholesterolemia, mixed hyperlipidemia, familial combined hyperlipidemia, lipodystrophy, cardiovascular disease, hypertension, stroke, atherosclerosis, arteriosclerosis, coronary artery disease, NASH, ASH, fatty liver disease, NAFLD, hepatomegaly, pancreatitis, metabolic syndrome, insulin resistance, prediabetes, type II diabetes, overweight, and obesity.

24. A kit for treating or preventing a dyslipidemia or a disease or condition associated with a dyslipidemia in a subject, the kit comprising (a) a first pharmaceutical comprising a C_1-C_4 alkyl ester azelate in an amount effective to treat or prevent the dyslipidemia, or a disease or condition associated with a dyslipidemia in the subject; and (b) a second pharmaceutical composition comprising a second active ingredient other than the C_1-C_4 alkyl ester azelate in the first pharmaceutical composition, wherein the first and second pharmaceutical compositions are contained in separate containers.