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Effects of hypolipemic drugs on psoriasis

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1. Trong, H. N.; Tat, T.N.; Anh, T.T.N.; Uyen, N.P.; Van, T.N.; Hau, K.T.; Gandolfi, M.; Satolli, F.; Feliciani, C.; Tirant, M.; Vojvodic, A.; Lotti, T. Efficacy of Adding Oral Simvastatin to Topical Therapy for Treatment of Psoriasis. *Open Access Maced J Med Sci*. 2019 Jan;7(2):237-242. doi:10.3889/oamjms.2019060. eCollection 2019 Jan 30.
- 2.Imamura, T.; Takata, I.; Ogasawara, M.; Matsutani, Y.; Yamamoto, T.; Asagami, C. Clofibrate treatment of psoriasis with hypertriglyceremia-clinical, histological and laboratory analysis. *Nihon Hifuka Gakkai Zasshi*. 1991 May;101(6):623-8.
- 3.Singh, S.; Bhansali, A. Randomized placebo control study of insulin sensitizers (Metformin and Pioglitazone) in psoriasis patients with metabolic syndrome (Topical Treatment Cohort). *BMC Dermatol*. 2016 Aug 17;16(1):12. doi: 10.1186/s12895-016-0049-y.
- 4.Xu, X.; Lin, L.; Chen, P.; Yu, Y.; Chen, S.; Chen, X.; Shao, Z. Treatment with liraglutide, a glucagon-like peptide-1 analogue, improves effectively the skin lesions of psoriasis patients with type 2 diabetes: A prospective cohort study. *Diabetes Res Clin Pract*. 2019 Apr;150:167-173 doi: 10.1016/j.diabres.2019.03.002. Epub 2019 Mar 4.
- 5.Liberati, A.; Altman, D.G.; Tetzlaff, J.; Mulrow, C.; Gøtzsche, P.C.; Ioannidis, J.P.; Clarke, M.; Devereaux, P.J.; Kleijnen, J.; Moher, D. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration. *Ann. Intern. Med*. 2009, 151, W65-W94.
- 6.Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ* 2021, 372, n71.
- 7.Garschick, M., S.; Drenkova, K.; Barrett, T.J.; Schlamp, F.; Fisher, E.A.; Katz, S.; Jelic, S.; Neimann, A.L.; Scher, J.U.; Krueger, J.; Berger, J.S. A Randomized Open-Label Clinical trial of Lipid-Lowering Therapy in Psoriasis to Reduce Vascular Endothelial Inflammation. *J Invest Dermatol*. 2022 Jun;142(6):1749-1752.e4. doi: 10.1016/j.jid.2021.07.190. Epub 2021 Nov.
- 8.Naseri, M.; Hadipour, A.; Sepaskhah, M.; Namazi, M.R. The remarkable beneficial effect of adding oral simvastatin to topical betamethasone for treatment of psoriasis: a double-blind, randomized, placebo-controlled study. *Niger J Med*. 2010 Jan-Mar;19(1):58-61. doi: 10.4314/njm.v19i1.54216.
- 9.Wolkenstein, P.; Revuz, J.; Roujeau, J.C.; Bonnelye, G.; Grob, J.J.; Bastuji-Garin, S. Psoriasis in France and Associated Risk Factors: Results of a Case-Control Study Based on a Large Community Survey. *Dermatology*. 2009;218(2):103-9. doi: 10.1159/000182258. Epub 2008 Dec 6.
- 10.Shirinsky, I.V.; Shirinsky, V.S. Efficacy of simvastatin in plaque psoriasis: A pilot study. *J Am Acad Dermatol*. 2007 Sep;57(3):529-31. doi: 10.1016/j.jaad.2007.05.040.
- 11.Soodgupta, D.; Kaul, S.; Kanwar, A.J.; Parsad, D. Modulation of LXR- α and the effector genes by Ascorbic acid and Statins in psoriatic keratinocytes. *Mol Cell Biochem*. 2014 Dec;3979(1-2):1-6. doi: 10.1007/s11010-014-2063-x. Epub 2014 Oct 5.
- 12.Garschick, M.S.; Block, R.; Drenkova, K.; Tawil, M.; James, G.; Brenna, J.T. Statin therapy upregulates arachidonic acid status via enhanced endogenous synthesis in patients with plaque psoriasis. *Prostaglandins Leukot Essent Fatty Acids*. 2022 May;180:102428. doi: 10.1016/j.plefa.2022.102428. Epub 2022 Apr 16.
- 13.Vasiuk, I.A.; Perlamutrov, I.N.; Shkol'nik, M.N.; Shkol'nik, E.L. Possibilities of atorvastatin in complex management of extensive psoriasis in patients with arterial hypertension. *Kardiologiya*. 2010;50(3):37-46.
- 14.Chua, S.H.H.; Tioleco, G.M.S.; Dayrit, C.A.F.; Mojica, W.P.; Dofitas, B.L.; Frez, L.F. Atorvastatin as adjunctive therapy for chronic type psoriasis versus betamethasone valerate alone: A randomized, double-blind, placebo-controlled trial. *Indian J Dermatol Venerol Leprol*. 2017 Jul-Aug;83(4):441-447. doi: 10.4103/ijdv.IJDVL_425_16.
- 15.Faghihi, T.; Radfar, M.; Mehrabian, Z.; Ehsani, A.H.; Hemami, M.R. Atorvastatin for the treatment of plaque-type psoriasis. *Pharmacotherapy*. 2011 Nov;31(11): 1045-50. doi: 10.1592/phco.31.11.1045.
- 16.Salman, M.A.; Ghiasi, M.; Farid, A.S.; Taraz, M.; Azizpour, A.; Mahmoudi, H. Oral simvastatin combined with narrowband UVB for the treatment of psoriasis: A randomized controlled trial. *Dermatol Ther*. 2021 Sep;34(5):315075. doi: 10.1111/dth.15075. Epub 2021 Aug 19.
- 17.Aslam, S.; Khurshid, K.; Asad, F.; Rani, Z.; Pal, S.S.P. Efficacy and safety of simvastatin in chronic plaque psoriasis. *Journal of Pakistan Association of Dermatologists* 2013;23 (3):310-314.
- 18.Colsman, A.; Sticherling, M. Simvastatin in psoriasis: ambiguous effects. *Acta Derm Venereol*. 2010 Jul;90(4):411. doi: 10.2340/00015555-0852.
- 19.Cozzani, E.; Scaparro, M.; Parodi, A.; A case of psoriasis worsened by atorvastatin. *J Dermatol Case Rep*. 2009 Dec 30; 3(4): 60-61. doi: 10.3315/jdcr.2009.1037.
- 20.Salna, M.P.; Singer, H.M.; Dana, A.N. Pravastatin-Induced Eczematous Eruption Mimicking Psoriasis. *Case Rep Dermatol Med*. 2017;2017:3418204. doi: 10.1155/2017/3418204. Epub 2017 Jul 31.
- 21.Jacobi, T.C.; Higher, A. A clinical dilemma while treating hypercholesterolemia in psoriasis. *Br J Dermatol*. 2003 Dec;149(6):1305-6. doi: 10.1111/j.1365-2133.2003.05675.x.
- 22.Vahlquist, C.; Olsson, A.G.; Lindholm, A.; Vahlquist, A. Effects of gemfibrozil (Lopid) on hyperlipidemia in acitretin-treated patients. Results of a double-blind cross-over study. *Acta Derm Venereol*. 1995 Sep;75(5):377-80. doi: 10.2340/0001555575377380.
- 23.Fisher, D.A.; Elias, P.M.; LeBoit, P.L. Exacerbation of Psoriasis by the Hypolipidemic Agent, Gemfibrozil. *Arch Dermatol*. 1988 Jun;124(6):854-5.
- 24.Bongartz, T.; Coras, B.; Vogt, T.; Scholmerlich, J.; Muller-Ladner, U. Treatment of active psoriatic arthritis with the PPARgamma ligand pioglitazone: an open-label pilot study. *Rheumatology (Oxford)*. 2005 Jan;44(1):126-9. doi: 10.1093/rheumatology/keh423. Epub 2004 Oct 12.

25. Shafiq, N.; Malhotra, S.; Pandhi, P.; Gupta, M.; Kumar, B.; Sandhu, K. Pilot trial: Pioglitazone versus placebo in patients with plaque psoriasis (the P6). *Int J Dermatol*. 2005 Apr;44(4):328-33. doi: 10.1111/j.1365-4632.2005.02504/x
26. Lajevardi, V.; Hallaji, Z.; Daklan, S.; Abedini, R.; Goodarzi, A.; Abdolreza, M. The efficacy of methotrexate plus pioglitazone vs. methotrexate alone in the management of patients with plaque-type psoriasis: a single-blinded randomized controlled trial. *Int J Dermatol*. 2015 Jan;54(1):95-101. doi: 10.1111/ijd.12585. Epub 2014 Sep 10.
27. Abidi, A.; Rizvi, D.A.; Saxena, K.; Chaudhary, S.; Ahmad, A. The evaluation of efficacy and safety of methotrexate and pioglitazone psoriasis patients: A randomized, open-labeled, active-controlled clinical trial. *Indian J Pharmacol*. 2020 Jan-Feb; 52(1):16-22. doi: 10.4103/ijp.IJP_88_19
28. Mittal, R.; Malhotra, S.; Pandhi, P.; Kaur, I.; Dogra, S. Efficacy and safety of combination Acitretin and Pioglitazone therapy in patients with moderate to severe chronic plaque-type psoriasis: a randomized, double-blind, placebo-controlled clinical trial. *Arch Dermatol*. 2009 Apr;145(4):387-93. doi: 10.1001/archdermatol.2009.5.
29. Ghiasi, M.; Ebrahimi, S.; Lajevardi, V.; Taraz, M.; Azizpour, A. Efficacy and safety of pioglitazone plus phototherapy versus phototherapy in patients with plaque type psoriasis: a Double Blinded Randomized Controlled Trial. *J Dermatolog Treat*. 2019 Nov;30(7):664-667. doi: 10.1080/09546634.2018.1544702. Epub 2018 Dec 3.
30. Hafez, V.G.; Bosseila, M.; Halim, M.R.E.A.; Shaker, O.G.; Kamal, M.; Kareem, H.S. Clinical effects of "pioglitazone", an insulin sensitizing drug, on psoriasis vulgaris and its co-morbidities, a double blinded randomized controlled trial¹. *J Dermatolog Treat*. 2015 Jun;26(3):208-14. doi:10.3109/09546634.2014.932.324. Epub 2014 Jul 1.
31. Pershadsingh, H.A.; Benson, S.C.; Ellis, C.N. Improvement in psoriasis with rosiglitazone in a diabetic and a nondiabetic patient. *Skinmed*. 2005 Nov-Dec;4(6):386-90. doi: 10.1111/j.1540-9740.2005.04434.x.
32. Ellis, C.N.; Barker, J.N.; Haig, A.E.; Parker, C.A.; Daly, S.; Jayawardene, D.A.; Avandia Psoriasis Study Group. Placebo response in two long-term randomized psoriasis studies that were negative for rosiglitazone. *Am J Clin Dermatol*. 2007;8(2):93-102. doi: 10.2165/00128071-200708020-00005.
33. Lin, L.; Xu, X.; Yu, Y.; Ye, H.; He, X.; Chen, S.; Chen, X.; Shao, Z.; Chen, P. Glucagon-like peptide-1 receptor agonist liraglutide therapy for psoriasis patients with type 2 diabetes: a randomized controlled trial. *J Dermatolog Treat*. 2022 May;33(3):1428-1434. doi: 10.1080/09546634.2020.1826392. Epub 2020 Sep 24.
34. Faurschou, A.; Knop, F.K.; Thyssen, J.P.; Zachariae, C.; Skov, L.; Visboll, T. Improvement in psoriasis after treatment with the glucagon-like peptide-1 receptor agonist liraglutide. *Acta Diabetol*. 2014 Feb;51(1):147-50. doi: 10.1007/s00592-011-0359-9. Epub 2011 Dec 13.
35. Ahern, T.; Tobin, A.-M.; Corrigan, M.; Hogan, A.; Sweeney, C.; Kirby, B.; O'Shea, D. Glucagon-like peptide-1 analogue therapy for psoriasis patients with obesity and type 2 diabetes: a prospective cohort study. *J Eur Acad Dermatol Venereol*. 2013 Nov;27(11):1440-3. doi: 10.1111/j.1468-3083.2012.04609.x. Epub 2012 Jun 13.
36. Faurschou, A.; Gyldenlove, M.; Rohde, U.; Thyssen, J.P.; Zachariae, C.; Skov, L.; Knop, F.K.; Vilsboll, T. Lack of effect of the glucagon-like peptide-1 receptor agonist liraglutide on psoriasis in glucose-tolerant patients—a randomized placebo- controlled trial. *J Eur Acad Dermatol Venereol*. 2015 Mar;29(3):555-9. doi: 10.1111/jdv.12629. Epub 2014 Aug 20.
37. Buysschaert, M.; Tennstedt, D.; Preumont, V. Improvement of psoriasis during exenatide treatment in a patient with diabetes. *Diabetes Metab*. 2012 Feb;38(1):86-8. doi: 10.1016/j.diabet.2011.11.004. Epub 2012 Jan 9.
38. Buysschaert, M.; Baeck, M.; Preumont, V.; Marot, L.; Hendrickx, E.; Van Belle, A.; Dumoutier, L.; Improvement of psoriasis during glucagon-like peptide-1 analogue therapy in type 2 diabetes is associated with decreasing dermal $\gamma\delta$ T-cell number: a prospective case-series study. *Br J Dermatol*. 2014 Jul;171(1):155-61. doi: 10.1111/bjd.12886. Epub 2014 Jul 16.
39. Hogan, A.E.; Tobin, A.M.; Ahern, T.; Corrigan, M.A.; Gaoatswe, G.; Jackson, R.; O'Reilly, V.; Lynch, L.; Doherty, D.G.; Moynagh, P.N.; Kirby, B.; O'Connell, J.; O'Shea, D. Glucagon-like peptide-1 (GLP-1) and the regulation of human invariant natural killer T cells, lessons from obesity, diabetes and psoriasis. *Diabetologia*. 2011 Nov;54(11):2745-54. doi: 10.1007/s00125-011-2232-3. Epub 2011 Jul 9.
40. Reid, C.T.; Tobin, A.M.; Ahern, T.; O'Shea, D.; Kirby, B. Liraglutide in combination with acitretin for severe recalcitrant psoriasis. *Br J Dermatol*. 2013 Jul;169(1):230-1. doi: 10.1111/bjd.12380.
41. Costanzo, G.; Curatolo, S.; Busa, B.; Belfiore, A.; Gullo, D. Two birds one stone: semaglutide is highly effective against severe psoriasis in a type 2 diabetic patient. *Endocrinol Diabetes Metab Case Rep*. 2021; 2021:21-0007. doi: 10.1530/EDM-21-0007.
1. Trong, H. N.; Tat, T.N.; Anh, T.T.N.; Uyen, N.P.; Van, T.N.; Hau, K.T.; Gandolfi, M.; Satolli, F.; Feliciani, C.; Tirant, M.; Vojvodic, A.; Lotti, T. Efficacy of Adding Oral Simvastatin to Topical Therapy for Treatment of Psoriasis. *Open Access Maced J Med Sci*. 2019 Jan;7(2):237-242. doi:10.3889/oamjms.2019060. eCollection 2019 Jan 30.
2. Imamura, T.; Takata, I.; Ogasawara, M.; Matsutani, Y.; Yamamoto, T.; Asagami, C. Clofibrate treatment of psoriasis with hypertriglyceridemia-clinical, histological and laboratory analysis. *Nihon Hifuka Gakkai Zasshi*. 1991 May;101(6):623-8.
3. Singh, S.; Bhansali, A. Randomized placebo control study of insulin sensitizers (Metformin and Pioglitazone) in psoriasis patients with metabolic syndrome (Topical Treatment Cohort). *BMC Dermatol*. 2016 Aug 17;16(1):12. doi: 10.1186/s12895-016-0049-y.
4. Xu, X.; Lin, L.; Chen, P.; Yu, Y.; Chen, S.; Chen, X.; Shao, Z. Treatment with liraglutide, a glucagon-like peptide-1 analogue, improves effectively the skin lesions of psoriasis patients with type 2 diabetes: A prospective cohort study. *Diabetes Res Clin Pract*. 2019 Apr; 150:167-173 doi: 10.1016/j.diabres.2019.03.002. Epub 2019 Mar 4.
5. Liberati, A.; Altman, D.G.; Tetzlaff, J.; Mulrow, C.; Gøtzsche, P.C.; Ioannidis, J.P.; Clarke, M.; Devereaux, P.J.; Kleijnen, J.; Moher, D. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration. *Ann. Intern. Med*. 2009, 151, W65-W94.

6. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ* 2021, 372, n71.
7. Garschick, M., S.; Drenkova, K.; Barrett, T.J.; Schlamp, F.; Fisher, E.A.; Katz, S.; Jelic, S.; Neimann, A.L.; Scher, J.U.; Krueger, J.; Berger, J.S. A Randomized Open-Label Clinical trial of Lipid-Lowering Therapy in Psoriasis to Reduce Vascular Endothelial Inflammation. *J Invest Dermatol.* 2022 Jun;142(6):1749-1752.e4. doi: 10.1016/j.jid.2021.07.190. Epub 2021 Nov.
8. Naseri, M.; Hadipour, A.; Sepaskhah, M.; Namazi, M.R. The remarkable beneficial effect of adding oral simvastatin to topical betamethasone for treatment of psoriasis: a double-blind, randomized, placebo-controlled study. *Niger J Med.* 2010 Jan-Mar; 19(1):58-61. doi: 10.4314/njm.v19i1.54216.
9. Wolkenstein, P.; Revuz, J.; Roujeau, J.C.; Bonnelye, G.; Grob, J.J.; Bastuji-Garin, S. Psoriasis in France and Associated Risk Factors: Results of a Case-Control Study Based on a Large Community Survey. *Dermatology.* 2009;218(2):103-9. doi: 10.1159/000182258. Epub 2008 Dec 6.
10. Shirinsky, I.V.; Shirinsky, V.S. Efficacy of simvastatin in plaque psoriasis: A pilot study. *J Am Acad Dermatol.* 2007 Sep;57(3):529-31. doi: 10.1016/j.jaad.2007.05.040.
11. Soodgupta, D.; Kaul, S.; Kanwar, A.J.; Parsad, D. Modulation of LXR- α and the effector genes by Ascorbic acid and Statins in psoriatic keratinocytes. *Mol Cell Biochem.* 2014 Dec;397(1-2):1-6. doi: 10.1007/s11010-014-2063-x. Epub 2014 Oct 5.
12. Garschick, M.S.; Block, R.; Drenkova, K.; Tawil, M.; James, G.; Brenna, J.T. Statin therapy upregulates arachidonic acid status via enhanced endogenous synthesis in patients with plaque psoriasis. *Prostaglandins Leukot Essent Fatty Acids.* 2022 May;180:102428. doi: 10.1016/j.plefa.2022.102428. Epub 2022 Apr 16.
13. Vasiuk, I.A.; Perlamutrov, I.N.; Shkol'nik, M.N.; Shkol'nik, E.L. Possibilities of atorvastatin in complex management of extensive psoriasis in patients with arterial hypertension. *Kardiologiia.* 2010;50(3):37-46.
14. Chua, S.H.H.; Tioleco, G.M.S.; Dayrit, C.A.F.; Mojica, W.P.; Dofitas, B.L.; Frez, L.F. Atorvastatin as adjunctive therapy for chronic type psoriasis versus betamethasone valerate alone: A randomized, double-blind, placebo-controlled trial. *Indian J Dermatol Venerol Leprol.* 2017 Jul-Aug;83(4):441-447. doi: 10.4103/ijdv.IJDVL_425_16.
15. Faghihi, T.; Radfar, M.; Mehrabian, Z.; Ehsani, A.H.; Hemami, M.R. Atorvastatin for the treatment of plaque-type psoriasis. *Pharmacotherapy.* 2011 Nov;31(11): 1045-50. doi: 10.1592/phco.31.11.1045.
16. Salman, M.A.; Ghiasi, M.; Farid, A.S.; Taraz, M.; Azizpour, A.; Mahmoudi, H. Oral simvastatin combined with narrowband UVB for the treatment of psoriasis: A randomized controlled trial. *Dermatol Ther.* 2021 Sep;34(5):315075. doi: 10.1111/dth.15075. Epub 2021 Aug 19.
17. Aslam, S.; Khurshid, K.; Asad, F.; Rani, Z.; Pal, S.S.P. Efficacy and safety of simvastatin in chronic plaque psoriasis. *Journal of Pakistan Association of Dermatologists* 2013;23 (3):310-314.
18. Colman, A.; Sticherling, M. Simvastatin in psoriasis: ambiguous effects. *Acta Derm Venereol.* 2010 Jul;90(4):411. doi: 10.2340/00015555-0852.
19. Cozzani, E.; Scaparro, M.; Parodi, A.; A case of psoriasis worsened by atorvastatin. *J Dermatol Case Rep.* 2009 Dec 30; 3(4): 60-61. doi: 10.3315/jdcr.2009.1037.
20. Salna, M.P.; Singer, H.M.; Dana, A.N. Pravastatin-Induced Eczematous Eruption Mimicking Psoriasis. *Case Rep Dermatol Med.* 2017;2017:3418204. doi: 10.1155/2017/3418204. Epub 2017 Jul 31.
21. Jacobi, T.C.; Higher, A. A clinical dilemma while treating hypercholesterolemia in psoriasis. *Br J Dermatol.* 2003 Dec;149(6):1305-6. doi: 10.1111/j.1365-2133.2003.05675.x.
22. Vahlquist, C.; Olsson, A.G.; Lindholm, A.; Vahlquist, A. Effects of gemfibrozil (Lopid) on hyperlipidemia in acitretin-treated patients. Results of a double-blind cross-over study. *Acta Derm Venereol.* 1995 Sep;75(5):377-80. doi: 10.2340/0001555575377380.
23. Fisher, D.A.; Elias, P.M.; LeBoit, P.L. Exacerbation of Psoriasis by the Hypolipidemic Agent, Gemfibrozil. *Arch Dermatol.* 1988 Jun;124(6):854-5.
24. Bongartz, T.; Coras, B.; Vogt, T.; Scholmerlich, J.; Muller-Ladner, U. Treatment of active psoriatic arthritis with the PPAR γ ligand pioglitazone: an open-label pilot study. *Rheumatology (Oxford).* 2005 Jan;44(1):126-9. doi: 10.1093/rheumatology/keh423. Epub 2004 Oct 12.
25. Shafiq, N.; Malhotra, S.; Pandhi, P.; Gupta, M.; Kumar, B.; Sandhu, K. Pilot trial: Pioglitazone versus placebo in patients with plaque psoriasis (the P6). *Int J Dermatol.* 2005 Apr;44(4):328-33. doi: 10.1111/j.1365-4632.2005.02504/x
26. Lajevardi, V.; Hallaji, Z.; Daklan, S.; Abedini, R.; Goodarzi, A.; Abdolreza, M. The efficacy of methotrexate plus pioglitazone vs. methotrexate alone in the management of patients with plaque-type psoriasis: a single-blinded randomized controlled trial. *Int J Dermatol.* 2015 Jan;54(1):95-101. doi: 10.1111/ijd.12585. Epub 2014 Sep 10.
27. Abidi, A.; Rizvi, D.A.; Saxena, K.; Chaudhary, S.; Ahmad, A. The evaluation of efficacy and safety of methotrexate and pioglitazone psoriasis patients: A randomized, open-labeled, active-controlled clinical trial. *Indian J Pharmacol.* 2020 Jan-Feb; 52(1):16-22. doi: 10.4103/ijp.IJP_88_19
28. Mittal, R.; Malhotra, S.; Pandhi, P.; Kaur, I.; Dogra, S. Efficacy and safety of combination Acitretin and Pioglitazone therapy in patients with moderate to severe chronic plaque-type psoriasis: a randomized, double-blind, placebo-controlled clinical trial. *Arch Dermatol.* 2009 Apr;145(4):387-93. doi: 10.1001/archdermatol.2009.5.
29. Ghiasi, M.; Ebrahimi, S.; Lajevardi, V.; Taraz, M.; Azizpour, A. Efficacy and safety of pioglitazone plus phototherapy versus phototherapy in patients with plaque type psoriasis: a Double Blinded Randomized Controlled Trial. *J Dermatolog Treat.* 2019 Nov;30(7):664-667. doi: 10.1080/09546634.2018.1544702. Epub 2018 Dec 3.

- 30.Hafez, V.G.; Bosseila, M.; Halim, M.R.E.A.; Shaker, O.G.; Kamal, M.; Kareem, H.S. Clinical effects of "pioglitazone", an insulin sensitizing drug, on psoriasis vulgaris and its co-morbidities, a double blinded randomized controlled trial¹. *J Dermatolog Treat*. 2015 Jun;26(3):208-14. doi:10.3109/09546634.2014.932.324. Epub 2014 Jul 1.
- 31.Pershad Singh, H.A.; Benson, S.C.; Ellis, C.N. Improvement in psoriasis with rosiglitazone in a diabetic and a nondiabetic patient. *Skinmed*. 2005 Nov-Dec;4(6):386-90. doi: 10.1111/j.1540-9740.2005.04434.x.
- 32.Ellis, C.N.; Barker, J.N.; Haig, A.E.; Parker, C.A.; Daly, S.; Jayawardene, D.A.; Avandia Psoriasis Study Group. Placebo response in two long-term randomized psoriasis studies that were negative for rosiglitazone. *Am J Clin Dermatol*. 2007;8(2):93-102. doi: 10.2165/00128071-200708020-00005.
- 33.Lin, L.; Xu, X.; Yu, Y.; Ye, H.; He, X.; Chen, S.; Chen, X.; Shao, Z.; Chen, P. Glucagon-like peptide-1 receptor agonist liraglutide therapy for psoriasis patients with type 2 diabetes: a randomized controlled trial. *J Dermatolog Treat*. 2022 May;33(3):1428-1434. doi: 10.1080/09546634.2020.1826392. Epub 2020 Sep 24.
- 34.Faurschou, A.; Knop, F.K.; Thyssen, J.P.; Zachariae, C.; Skov, L.; Visboll, T. Improvement in psoriasis after treatment with the glucagon-like peptide-1 receptor agonist liraglutide. *Acta Diabetol*. 2014 Feb;51(1):147-50. doi: 10.1007/s00592-011-0359-9. Epub 2011 Dec 13.
- 35.Ahern, T.; Tobin, A-M.; Corrigan, M.; Hogan, A.; Sweeney, C.; Kirby, B.; O'Shea, D. Glucagon-like peptide-1 analogue therapy for psoriasis patients with obesity and type 2 diabetes: a prospective cohort study. *J Eur Acad Dermatol Venereol*. 2013 Nov;27(11):1440-3. doi: 10.1111/j.1468-3083.2012.04609.x. Epub 2012 Jun 13.
- 36.Faurschou, A.; Gyldenlove, M.; Rohde, U.; Thyssen, J.P.; Zachariae, C.; Skov, L.; Knop, F.K.; Vilsboll, T. Lack of effect of the glucagon-like peptide-1 receptor agonist liraglutide on psoriasis in glucose-tolerant patients—a randomized placebo- controlled trial. *J Eur Acad Dermatol Venereol*. 2015 Mar;29(3):555-9. doi: 10.1111/jdv.12629. Epub 2014 Aug 20.
- 37.Buysschaert, M.; Tennstedt, D.; Preumont, V. Improvement of psoriasis during exenatide treatment in a patient with diabetes. *Diabetes Metab*. 2012 Feb;38(1):86-8. doi: 10.1016/j.diabet.2011.11.004. Epub 2012 Jan 9.
- 38.Buysschaert, M.; Baeck, M.; Preumont, V.; Marot, L.; Hendrickx, E.; Van Belle, A.; Dumoutier, L.; Improvement of psoriasis during glucagon-like peptide-1 analogue therapy in type 2 diabetes is associated with decreasing dermal $\gamma\delta$ T-cell number: a prospective case-series study. *Br J Dermatol*. 2014 Jul;171(1):155-61. doi: 10.1111/bjd.12886. Epub 2014 Jul 16.
- 39.Hogan, A.E.; Tobin, A.M.; Ahern, T.; Corrigan, M.A.; Gaoatswe, G.; Jackson, R.; O'Reilly, V.; Lynch, L.; Doherty, D.G.; Moynagh, P.N.; Kirby, B.; O'Connell, J.; O'Shea, D. Glucagon-like peptide-1 (GLP-1) and the regulation of human invariant natural killer T cells, lessons from obesity, diabetes and psoriasis. *Diabetologia*. 2011 Nov;54(11):2745-54. doi: 10.1007/s00125-011-2232-3. Epub 2011 Jul 9.
- 40.Reid, C.T.; Tobin, A.M.; Ahern, T.; O'Shea, D.; Kirby, B. Liraglutide in combination with acitretin for severe recalcitrant psoriasis. *Br J Dermatol*. 2013 Jul;169(1):230-1. doi: 10.1111/bjd.12380.
- 41.Costanzo, G.; Curatolo, S.; Busa, B.; Belfiore, A.; Gullo, D. Two birds one stone: semaglutide is highly effective against severe psoriasis in a type 2 diabetic patient. *Endocrinol Diabetes Metab Case Rep*. 2021; 2021:21-0007. doi: 10.1530/EDM-21-0007.

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We use this protocol and it's working

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Keywords: psoriasis psoriasis, psoriasis, statin, course of psoriasis, lipid profile in patient, hypolipemic drug, triglyceride, lipid profile, effects of hypolipemic drug, density lipoprotein cholesterol, density lipoprotein, total cholesterol, effect of different hypolipemic treatment, different hypolipemic treatment, lipid abnormality, atherosclerosis, numerous metabolic disorder, atherosclerotic plaque, inflammatory disease, fatty acid, medication, drugs in treatment, pioglitazone, multiple metabolic

Abstract

Psoriasis is a chronic, systematic, inflammatory disease in which, multiple metabolic and immunologic disturbances lead to lipid abnormalities, impaired glucose tolerance, metabolic syndrome, diabetes mellitus, atherosclerosis, hypertension, ischemic heart disease, and numerous metabolic disorders. In clinical practice, the most commonly used drugs in treatment of lipid abnormalities are statins and fibrates. Statins are characterized by pleiotropic effects, such as antioxidant, anti-inflammatory, anticoagulant, antiproliferative. They work by reducing concentration of low-density lipoprotein (LDL), total cholesterol, triglycerides, and stabilize atherosclerotic plaque. Fibrates are medications, which help to lower triglycerides, LDL, very low-density lipoprotein (VLDL) levels and increase lower high-density lipoprotein (HDL). In recent years, many new drugs were found to normalize lipid profile in patients with psoriasis: glitazones (pioglitazone, troglitazone), and glucagon-like peptide-1 (GLP-1) receptor agonists. Pioglitazone improves lipid profile including decrease of triglicerydes, fatty acids, LDL, and increase of HDL. Glucagon-like peptide 1 (GLP-1) analogues decrease modestly low-density lipoprotein cholesterol (LDL-C), total cholesterol and triglycerides. The purpose of this study is to assess the current state of knowledge on the effect of different hypolipemic treatments on the course of psoriasis. The study includes literature from medical databases: Pubmed and Google Scholar. We were browsing the PubMed and Google Scholar untill the beginning of December. The systematic review includes 41 eligible original articles.

Attachments



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Protocol references

References

1. Trong, H. N.; Tat, T.N.; Anh, T.T.N.; Uyen, N.P.; Van, T.N.; Hau, K.T.; Gandolfi, M.; Satolli, F.; Feliciani, C.; Tirant, M.; Vojvodic, A.; Lotti, T. Efficacy of Adding Oral Simvastatin to Topical Therapy for Treatment of Psoriasis. *Open Access Maced J Med Sci*. 2019 Jan;7(2):237-242. doi:10.3889/oamjms.2019060. eCollection 2019 Jan 30.
2. Imamura, T.; Takata, I.; Ogasawara, M.; Matsutani, Y.; Yamamoto, T.; Asagami, C. Clofibrate treatment of psoriasis with hypertriglycemia-clinical, histological and laboratory analysis. *Nihon Hifuka Gakkai Zasshi*. 1991 May;101(6):623-8.
3. Singh, S.; Bhansali, A. Randomized placebo control study of insulin sensitizers (Metformin and Pioglitazone) in psoriasis patients with metabolic syndrome (Topical Treatment Cohort). *BMC Dermatol*. 2016 Aug 17;16(1);12. doi: 10.1186/s12895-016-0049-y.
4. Xu, X.; Lin, L.; Chen, P.; Yu, Y.; Chen, S.; Chen, X.; Shao, Z. Treatment with liraglutide, a glucagon-like peptide-1 analogue, improves effectively the skin lesions of psoriasis patients with type 2 diabetes: A prospective cohort study. *Diabetes Res Clin Pract*. 2019 Apr; 150;167-173 doi: 10.1016/j.diabres.2019.03.002. Epub 2019 Mar 4.
5. Liberati, A.; Altman, D.G.; Tetzlaff, J.; Mulrow, C.; Gøtzsche, P.C.; Ioannidis, J.P.; Clarke, M.; Devereaux, P.J.; Kleijnen, J.; Moher, D. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions: Explanation and Elaboration. *Ann. Intern. Med*. 2009, 151, W65–W94.
6. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ* 2021, 372, n71.
7. Garschick, M., S.; Drenkova, K.; Barrett, T.J.; Schlamp, F.; Fisher, E.A.; Katz, S.; Jelic, S.; Neimann, A.L.; Scher, J.U.; Krueger, J.; Berger, J.S. A Randomized Open-Label Clinical trial of Lipid-Lowering Therapy in Psoriasis to Reduce Vascular Endothelial Inflammation. *J Invest Dermatol*. 2022 Jun;142(6);1749-1752.e4. doi. 10.1016/j.jid.2021.07.190. Epub 2021 Nov.
8. Naseri, M.; Hadipour, A.; Sepaskhah, M.; Namazi, M.R. The remarkable beneficial effect of adding oral simvastatin to topical betamethasone for treatment of psoriasis: a double-blind, randomized, placebo-controlled study. *Niger J Med*. 2010 Jan-Mar; 19(1):58-61. doi: 10.4314/njm.v19i1.54216.
9. Wolkenstein, P.; Revuz, J.; Roujeau, J.C.; Bonnelye, G.; Grob, J.J.; Bastuji-Garin, S. Psoriasis in France and Associated Risk Factors: Results of a Case-Control Study Based on a Large Community Survey. *Dermatology*. 2009;218(2):103-9. doi: 10.1159/000182258. Epub 2008 Dec 6.
10. Shirinsky, I.V.; Shirinsky, V.S. Efficacy of simvastatin in plaque psoriasis: A pilot study. *J Am Acad Dermatol*. 2007 Sep;57(3):529-31. doi: 10.1016/j.jaad.2007.05.040.
11. Soodgupta, D.; Kaul, S.; Kanwar, A.J.; Parsad, D. Modulation of LXR- α and the effector genes by Ascorbic acid and Statins in psoriatic keratinocytes. *Mol Cell Biochem*. 2014 Dec;3979(1-2):1-6. doi: 10.1007/s11010-014-2063-x. Epub 2014 Oct 5.
12. Garschick, M.S.; Block, R.; Drenkova, K.; Tawil, M.; James, G.; Brenna, J.T. Statin therapy upregulates arachidonic acid status via enhanced endogenous synthesis in patients with plaque psoriasis. *Prostaglandins Leukot Essent Fatty Acids*. 2022 May;180;102428. doi: 10.1016/j.plefa.2022.102428. Epub 2022 Apr 16.
13. Vasiuk, I.A.; Perlamutrov, I.N.; Shkol'nik, M.N.; Shkol'nik, E.L. Possibilities of atorvastatin in complex management of extensive psoriasis in patients with arterial hypertension. *Kardiologiia*. 2010;50(3):37-46.

- 14.Chua, S.H.H.; Tioleco, G.M.S.; Dayrit, C.A.F.; Mojica, W.P.; Dofitas, B.L.; Frez, L.F. Atorvastatin as adjunctive therapy for chronic type psoriasis versus betamethasone valerate alone: A randomized, double-blind, placebo-controlled trial. *Indian J Dermatol Venerol Leprol.* 2017 Jul-Aug;83(4):441-447. doi: 10.4103/ijdv.IJDVL_425_16.
- 15.Faghihi, T.; Radfar, M.; Mehrabian, Z.; Ehsani, A.H.; Hemami, M.R. Atorvastatin for the treatment of plaque-type psoriasis. *Pharmacotherapy.* 2011 Nov;31(11): 1045-50. doi: 10.1592/phco.31.11.1045.
- 16.Salman, M.A.; Ghiasi, M.; Farid, A.S.; Taraz, M.; Azizpour, A.; Mahmoudi, H. Oral simvastatin combined with narrowband UVB for the treatment of psoriasis: A randomized controlled trial. *Dermatol Ther.* 2021 Sep;34(5):315075. doi: 10.1111/dth.15075. Epub 2021 Aug 19.
- 17.Aslam, S.; Khurshid, K.; Asad, F.; Rani, Z.; Pal, S.S.P. Efficacy and safety of simvastatin in chronic plaque psoriasis. *Journal of Pakistan Association of Dermatologists* 2013;23 (3):310-314.
- 18.Colsman, A.; Sticherling, M. Simvastatin in psoriasis: ambiguous effects. *Acta Derm Venereol.* 2010 Jul;90(4):411. doi: 10.2340/00015555-0852.
- 19.Cozzani, E.; Scaparro, M.; Parodi, A.; A case of psoriasis worsened by atorvastatin. *J Dermatol Case Rep.* 2009 Dec 30; 3(4): 60-61. doi: 10.3315/jdcr.2009.1037.
- 20.Salna, M.P.; Singer, H.M.; Dana, A.N. Pravastatin-Induced Eczematous Eruption Mimicking Psoriasis. *Case Rep Dermatol Med.* 2017;2017:3418204. doi: 10.1155/2017/3418204. Epub 2017 Jul 31.
- 21.Jacobi, T.C.; Higher, A. A clinical dilemma while treating hypercholesterolemia in psoriasis. *Br J Dermatol.* 2003 Dec;149(6):1305-6. doi: 10.1111/j.1365-2133.2003.05675.x.
- 22.Vahlquist, C.; Olsson, A.G.; Lindholm, A.; Vahlquist, A. Effects of gemfibrozil (Lopid) on hyperlipidemia in acitretin-treated patients. Results of a double-blind cross-over study. *Acta Derm Venereol.* 1995 Sep;75(5):377-80. doi: 10.2340/0001555575377380.
- 23.Fisher, D.A.; Elias, P.M.; LeBoit, P.L. Exacerbation of Psoriasis by the Hypolipidemic Agent, Gemfibrozil. *Arch Dermatol.* 1988 Jun;124(6):854-5.
- 24.Bongartz, T.; Coras, B.; Vogt, T.; Scholmerlich, J.; Muller-Ladner, U. Treatment of active psoriatic arthritis with the PPARgamma ligand pioglitazone: an open-label pilot study. *Rheumatology (Oxford).* 2005 Jan;44(1):126-9. doi: 10.1093/rheumatology/keh423. Epub 2004 Oct 12.
- 25.Shafiq, N.; Malhotra, S.; Pandhi, P.; Gupta, M.; Kumar, B.; Sandhu, K. Pilot trial: Pioglitazone versus placebo in patients with plaque psoriasis (the P6). *Int J Dermatol.* 2005 Apr;44(4):328-33. doi: 10.1111/j.1365-4632.2005.02504/x
- 26.Lajevardi, V.; Hallaji, Z.; Daklan, S.; Abedini, R.; Goodarzi, A.; Abdolreza, M. The efficacy of methotrexate plus pioglitazone vs. methotrexate alone in the management of patients with plaque-type psoriasis: a single-blinded randomized controlled trial. *Int J Dermatol.* 2015 Jan;54(1):95-101. doi: 10.1111/ijd.12585. Epub 2014 Sep 10.
- 27.Abidi, A.; Rizvi, D.A.; Saxena, K.; Chaudhary, S.; Ahmad, A. The evaluation of efficacy and safety of methotrexate and pioglitazone psoriasis patients: A randomized, open-labeled, active-controlled clinical trial. *Indian J Pharmacol.* 2020 Jan-Feb; 52(1):16-22. doi: 10.4103/ijp.IJP_88_19
- 28.Mittal, R.; Malhotra, S.; Pandhi, P.; Kaur, I.; Dogra, S. Efficacy and safety of combination Acitretin and Pioglitazone therapy in patients with moderate to severe chronic plaque-type psoriasis: a randomized, double-blind, placebo-controlled clinical trial. *Arch Dermatol.* 2009 Apr;145(4):387-93. doi: 10.1001/archdermatol.2009.5.
- 29.Ghiasi, M.; Ebrahimi, S.; Lajevardi, V.; Taraz, M.; Azizpour, A. Efficacy and safety of pioglitazone plus phototherapy versus phototherapy in patients with plaque type psoriasis: a Double Blinded Randomized Controlled Trial. *J Dermatolog Treat.* 2019 Nov;30(7):664-667. doi: 10.1080/09546634.2018.1544702. Epub 2018 Dec 3.

- 30.Hafez, V.G.; Bosseila, M.; Halim, M.R.E.A.; Shaker, O.G.; Kamal, M.; Kareem, H.S. Clinical effects of "pioglitazone", an insulin sensitizing drug, on psoriasis vulgaris and its co-morbidities, a double blinded randomized controlled trialx1. *J Dermatolog Treat.* 2015 Jun;26(3):208-14. doi:10.3109/09546634.2014.932.324. Epub 2014 Jul 1.
- 31.Pershad Singh, H.A.; Benson, S.C.; Ellis, C.N. Improvement in psoriasis with rosiglitazone in a diabetic and a nondiabetic patient. *Skinmed.* 2005 Nov-Dec;4(6):386-90. doi: 10.1111/j.1540-9740.2005.04434.x.
- 32.Ellis, C.N.; Barker, J.N.; Haig, A.E.; Parker, C.A.; Daly, S.; Jayawardene, D.A.; Avandia Psoriasis Study Group. Placebo response in two long-term randomized psoriasis studies that were negative for rosiglitazone. *Am J Clin Dermatol.* 2007;8(2):93-102. doi: 10.2165/00128071-200708020-00005.
- 33.Lin, L.; Xu, X.; Yu, Y.; Ye, H.; He, X.; Chen, S.; Chen, X.; Shao, Z.; Chen, P. Glucagon-like peptide-1 receptor agonist liraglutide therapy for psoriasis patients with type 2 diabetes: a randomized controlled trial. *J Dermatolog Treat.* 2022 May;33(3):1428-1434. doi: 10.1080/09546634.2020.1826392. Epub 2020 Sep 24.
- 34.Faurschou, A.; Knop, F.K.; Thyssen, J.P.; Zachariae, C.; Skov, L.; Visboll, T. Improvement in psoriasis after treatment with the glucagon-like peptide-1 receptor agonist liraglutide. *Acta Diabetol.* 2014 Feb;51(1):147-50. doi: 10.1007/s00592-011-0359-9. Epub 2011 Dec 13.
- 35.Ahern, T.; Tobin, A-M.; Corrigan, M.; Hogan, A.; Sweeney, C.; Kirby, B.; O'Shea, D. Glucagon-like peptide-1 analogue therapy for psoriasis patients with obesity and type 2 diabetes: a prospective cohort study. *J Eur Acad Dermatol Venereol.* 2013 Nov;27(11):1440-3. doi: 10.1111/j.1468-3083.2012.04609.x. Epub 2012 Jun 13.
- 36.Faurschou, A.; Gyldenlove, M.; Rohde, U.; Thyssen, J.P.; Zachariae, C.; Skov, L.; Knop, F.K.; Vilsboll, T. Lack of effect of the glucagon-like peptide-1 receptor agonist liraglutide on psoriasis in glucose-tolerant patients—a randomized placebo- controlled trial. *J Eur Acad Dermatol Venereol.* 2015 Mar;29(3):555-9. doi: 10.1111/jdv.12629. Epub 2014 Aug 20.
- 37.Buysschaert, M.; Tennstedt, D.; Preumont, V. Improvement of psoriasis during exenatide treatment in a patient with diabetes. *Diabetes Metab.* 2012 Feb;38(1):86-8. doi: 10.1016/j.diabet.2011.11.004. Epub 2012 Jan 9.
- 38.Buysschaert, M.; Baeck, M.; Preumont, V.; Marot, L.; Hendrickx, E.; Van Belle, A.; Dumoutier, L.; Improvement of psoriasis during glucagon-like peptide-1 analogue therapy in type 2 diabetes is associated with decreasing dermal $\gamma\delta$ T-cell number: a prospective case-series study. *Br J Dermatol.* 2014 Jul;171(1):155-61. doi: 10.1111/bjd.12886. Epub 2014 Jul 16.
- 39.Hogan, A.E.; Tobin, A.M.; Ahern, T.; Corrigan, M.A.; Gaoatswe, G.; Jackson, R.; O'Reilly, V.; Lynch, L.; Doherty, D.G.; Moynagh, P.N.; Kirby, B.; O'Connell, J.; O'Shea, D. Glucagon-like peptide-1 (GLP-1) and the regulation of human invariant natural killer T cells, lessons from obesity, diabetes and psoriasis. *Diabetologia.* 2011 Nov;54(11):2745-54. doi: 10.1007/s00125-011-2232-3. Epub 2011 Jul 9.
- 40.Reid, C.T.; Tobin, A.M.; Ahern, T.; O'Shea, D.; Kirby, B. Liraglutide in combination with acitretin for severe recalcitrant psoriasis. *Br J Dermatol.* 2013 Jul;169(1):230-1. doi: 10.1111/bjd.12380.
- 41.Costanzo, G.; Curatolo, S.; Busa, B.; Belfiore, A.; Gullo, D. Two birds one stone: semaglutide is highly effective against severe psoriasis in a type 2 diabetic patient. *Endocrinol Diabetes Metab Case Rep.* 2021; 2021:21-0007. doi: 10.1530/EDM-21-0007.