

TrichoFoam™ & TrichoSol™

Beyond Use Date Study

Updated February 2026

Alopecia is a multifactorial condition that impacts people all over the world. The incidence of the most common type of alopecia, androgenetic alopecia (AGA), is difficult to assess given the increased variability between different groups of people, but one study estimates about 50% of men will suffer from AGA by 50 years of age and up to 90% in their lifetime. In addition, by the age of 70, approximately 50% of women may suffer from AGA.^{1,2} Alopecia areata (AA), the second most common type of alopecia, is an autoimmune disorder with a lifetime incidence of about 2% in the global population.³ However, hair loss is not solely a cosmetic issue. Studies have demonstrated significant psychological impacts of hair loss such as anxiety, depression, and impaired quality of life, highlighting the importance of early treatment and management of alopecia.⁴ Common treatments for alopecia include both oral and topical medicines. Topical medicines may allow patients to avoid systemic adverse effects associated with oral treatments. However, few topical medications for the management of AGA are currently available on the market and custom compounding may be required to achieve the correct strength and combinations. Given the need for topical alopecia therapies, stability studies validating the compatibility and stability of active pharmaceutical ingredients (APIs) in common compounding vehicles are essential.

Why Tricho?

The Tricho vehicles all contain TrichoTech™, a patented essential oil combination that has been studied to help promote scalp health. An in vitro study of this essential oil blend noted that TrichoTech™ was found to increase expression of fibroblast growth factors (FGF-7 and FGF-10).⁵ This data is promising as some studies suggest that FGFs promote hair growth by induction of anagen phase (growth phase) in resting hair follicles.⁶ In addition to this in vitro data, there have been limited studies evaluating TrichoSol in human volunteers. One study of 20 female and male patients compared a control group (no treatment) to treatment with minoxidil 3% in a conventional alcohol vehicle, TrichoSol alone, and minoxidil 3% in TrichoSol. The study found that after 90 days of treatment all groups had increased hair in the anagen phase as compared to the control group, but an increased percentage of patients in the TrichoSol alone and TrichoSol in combination with minoxidil 3% groups were in anagen phase as compared to the minoxidil 3% in a conventional alcohol vehicle group.⁷

Another study evaluated TrichoSol and TrichoFoam in 59 patients via patch test. No subjects presented clinical signs of irritation, sensitization, photoallergy, or phototoxicity as a result of patch testing. Similar testing was conducted in 52 patients with other vehicles containing TrichoTech™, including TrichoWash, TrichoCream, TrichoCond, and TrichoOil and similarly, none of the above signs of irritation or sensitization were reported as a result.⁸

Current BUD Data in Tricho Vehicles

TrichoFoam

- Caffeine 0.1-2%: 180 days BUD
- Clobetasol Propionate 0.01%: 150 days BUD
- Clobetasol Propionate 0.1%: 14 days BUD
- Dutasteride 0.1%: 90 days BUD
- Dutasteride >0.1-0.25% - 30 days BUD*
- Nicotinamide 0.25-0.5%: 180 days BUD
- Progesterone 0.25%: 120 days BUD
- Progesterone >0.25-2.5%: 90 days BUD
- Minoxidil 1% through <7%: 120 days BUD
- Minoxidil 7%: 180 days BUD
- Minoxidil 1-7%, Clobetasol Propionate 0.01-0.05%: 120 days
- Minoxidil 5-7%, Dutasteride 0.1-0.25%: 180 days
- Minoxidil 1-7%, Finasteride 0.1-0.25%: 60 days
- Minoxidil 7%, Finasteride 0.25%: 90 days
- Minoxidil 1-7%, Ketoconazole 0.5-2%: 150 days

*this product does not have limited BUD due to testing below potency, the lab was unable to test at 60 days due to formation of a precipitate

TrichoSol

- Cetirizine HCl 0.5-2.0%: 180 days BUD
- Dutasteride 0.1%: 180 days BUD
- Dutasteride >0.1%- 0.25%: 120 days BUD
- Hydrocortisone acetate 0.5%: 180 days BUD
- Hydrocortisone acetate >0.5 - 1%: 150 days BUD
- Nicotinamide 0.25-0.5%: 180 days BUD
- Progesterone 1.0%: 180 days BUD
- Progesterone >1%- 2.5%: 90 days BUD
- Pyridoxine HCl 0.25-5%: 180 days BUD
- Minoxidil 1% through <7%: 150 days
- Minoxidil 7%: stability persisted up to 380 days (max allowed 180 days)
- Minoxidil 1-7%, Clobetasol Propionate 0.01-0.05%: 180 days BUD
- Minoxidil 5-7%, Dutasteride 0.2-0.25%: 120 days BUD

- Minoxidil 1-7%, Ketoconazole 0.5-2%: 150 days BUD
- Minoxidil 2-10%, Finasteride 0.1-0.5%: 180 days BUD
- Minoxidil 2-10%, Finasteride 0.1-0.5%, Fluocinolone Ac 0.01%: 180 days BUD

All preparations passed AET per USP <51> at the 180-day timepoints (individual API formulations also passed AET at T=0, and combination formulations passed AET at T=90). TrichoSol formulas were studied in amber glass containers, TrichoFoam formulas we studied in opaque PET (polyethylene terephthalate) plastic containers except for combination formulations (minoxidil/clobetasol, minoxidil/dutasteride, minoxidil/finasteride, and minoxidil/ketoconazole) which were all stored in amber glass bottles.

Excipient Table:

Formula	Ethyl Alcohol 200 Proof	Diethylene Glycol Monoethyl Ether	Polysorbate 80	Oleic Acid	PEG 40 HCO	Other	pH adjusting agents
Caffeine 0.1-2% in TrichoFoam							None
Clobetasol Propionate 0.01-0.1% in TrichoFoam		6%					NaOH to pH 5
Dutasteride 0.1-0.25% in TrichoFoam		4.5%			3%		None
Nicotinamide (Niacinamide) 0.25-0.5% in TrichoFoam							NaOH to pH 6
Progesterone 0.25-2.5% in TrichoFoam				2%	5%		None
Minoxidil 1-7% in TrichoFoam						Sodium benzoate 0.1%	None
Minoxidil 1-7%, Clobetasol 0.01-0.05% in TrichoFoam		6%				Sodium thiosulfate 0.05%	None
Minoxidil 5-7%, Dutasteride 0.1-0.25% in TrichoFoam				2%	5%	Sodium thiosulfate 0.05%	None
Minoxidil 1-7%, Finasteride 0.1-0.25%				2%	5%	Sodium benzoate 0.1%	None
Minoxidil 1-7%, Ketoconazole 0.5-2% in TrichoFoam						Sodium metabisulfite 0.2%	Lactic acid as needed to solubilize ketoconazole

Cetirizine HCl 0.5-2% in TrichoSol							NaOH or trolamine to pH 5
Dutasteride 0.1-0.25% in TrichoSol		4.5%			3%		None
Hydrocortisone Acetate 0.5-1% in TrichoSol		4.5%			3%		None
Nicotinamide (Niacinamide) 0.25-0.5% in TrichoSol							NaOH to pH 6
Progesterone 1-2.5% in TrichoSol				2%	5%		None
Pyridoxine HCl 0.25-5%							None
Minoxidil 1-7% in TrichoSol						Sodium benzoate 0.1%	None
Minoxidil 1-7%, Clobetasol 0.01-0.05% in TrichoSol		6%				Sodium thiosulfate 0.05%	None
Minoxidil 5-7%, Dutasteride 0.1-0.25% in TrichoSol				2%	5%	Sodium thiosulfate 0.05%	None
Minoxidil 1-7%, Ketoconazole 0.5-2% in TrichoSol						Sodium metabisulfite 0.2%	Lactic acid as needed to solubilize ketoconazole
Minoxidil 2-10%, Finasteride 0.1-0.5%, Fluocinolone Ac 0.01% in TrichoSol	20-30%		2-5%				NaOH or lactic acid to pH 4-5
Minoxidil 2-10%, Finasteride 0.1-0.5%, Fluocinolone Ac 0.01% in TrichoSol	20-30%		2-5%				NaOH or lactic acid to pH 4-5

Results

Data in TrichoFoam^{9,10}

API	Elapsed Time (Days)	% Recovery (Room Temperature, 15-30 °C)			
		Low Concentration (SD)	pH	High Concentration (SD)	pH
Caffeine 0.1% - 2%	0	100.00 (0.58)	2.12	100.00 (0.75)	2.11
	7	102.77 (1.44)	2.09	98.64 (1.30)	2.15
	14	104.78 (0.14)	2.15	98.69 (0.45)	2.09
	30	104.23 (0.12)	2.19	98.41 (0.12)	2.17
	60	103.92 (0.32)	2.11	98.28 (0.18)	2.09
	90	101.95 (0.46)	1.98	97.88 (0.52)	1.99
	120	103.70 (0.36)	5.01	96.74 (0.56)	2.21
	150	103.39 (0.46)	2.17	96.47 (0.17)	2.19
	180	100.25 (0.33)	2.12	96.38 (0.65)	2.20

Clobetasol Propionate 0.01 – 0.1 %	0	100.00 (1.15)	4.85	100.00 (0.39)	4.30
	7	98.06 (0.49)	4.80	100.63 (0.26)	4.28
	14	95.54 (0.37)	4.77	103.09 (1.16)	4.25
	30	92.43 (0.42)	4.79	64.12 (0.25)	4.10
	60	92.22 (1.01)	4.72	-	-
	90	92.21 (1.09)	4.69	-	-
	120	91.14 (0.29)	4.73	-	-
	150	90.91 (0.23)	4.69	-	-
Dutasteride 0.1 – 0.25%	0	100.00 (1.24)	1.98	100.00 (0.35)	2.02
	7	104.32 (1.16)	2.20	103.94 (1.26)	2.02
	14	107.72 (1.33)	2.19	100.00 (1.55)	2.20
	30	107.37 (1.89)	2.13	103.59 (1.70)	2.12
	60	108.08 (0.68)	2.26	-	-
	90	106.57 (0.59)	2.1	-	-
	120	-	-	-	-
	150	-	-	-	-
Niacinamide 0.25 – 0.5%	0	100.00 (0.31)	6.19	100.00 (0.31)	6.27
	7	100.67 (0.36)	6.01	99.14 (0.37)	6.10
	14	101.57 (0.32)	6.15	99.76 (0.20)	6.19
	30	100.83 (0.53)	5.33	99.19 (0.76)	5.51
	60	100.46 (1.33)	5.45	98.81 (0.58)	5.63
	90	99.70 (0.41)	5.53	97.81 (0.32)	5.71
	120	100.10 (0.66)	5.60	98.15 (0.42)	5.65
	150	100.04 (0.30)	5.09	98.19 (0.40)	5.15
Progesterone 0.25 – 2.5 %	0	100.00 (0.26)	2.04	100.00 (0.12)	1.96
	7	100.12 (0.26)	2.11	97.02 (0.74)	2.03
	14	100.00 (0.22)	2.08	91.32 (0.15)	2.00
	30	95.10 (0.31)	2.00	91.32 (0.46)	1.97
	60	94.51 (1.37)	2.20	93.11 (0.96)	2.22
	90	92.12 (1.46)	2.24	93.50 (1.37)	2.24
	120	92.69 (0.17)	2.12	88.17 (0.66)	2.19
	150	-	-	-	-
Minoxidil 1 – 7%	0	100.00 (0.25)	3.17	100.00 (0.33)	3.70
	7	100.72 (0.47)	2.74	98.09 (0.48)	3.75
	14	96.25 (0.96)	3.77	98.20 (0.20)	3.78
	30	99.92 (0.12)	3.78	101.62 (0.57)	3.79
	60	98.12 (0.10)	3.90	101.10 (0.51)	3.85
	90	96.90 (0.14)	3.67	101.54 (0.17)	3.64
	120	96.41 (0.14)	3.63	100.55 (0.40)	3.63
	150	85.48 (0.35)	3.69	100.59 (0.34)	3.68
	180	-	-	99.50 (1.30)	3.72

SD= Standard Deviation

Data in TrichoFoam (Combination Study)

Formulation	Minoxidil (%)	Clobetasol Propionate (%)	Dutasteride (%)	Finasteride (%)	Ketoconazole (%)
Minoxidil 1%, Clobetasol 0.01%					
T= 0	100.00	100.00			
T =60	100.94	99.34			
T = 90	97.66	98.04			
T = 120	94.83	97.33			
T=180	N/A (failed at 150 days)				
Minoxidil 7%, Clobetasol 0.05%					
T= 0	100.00	100.00			
T =60	104.7	98.40			
T = 90	104.72	98.19			
T = 120	103.49	98.87			

T=180	103.9	102.6			
Minoxidil 5%, Dutasteride 0.1%					
T= 0	100.00		100.00		
T =60	102.25		102.29		
T = 90	101.9		100.78		
T = 120	100.54		99.91		
T=180	97.10		96.68		
Minoxidil 7%, Dutasteride 0.25%					
T= 0	100.00		100.00		
T =60	101.7		99.76		
T = 90	101.92		99.80		
T = 120	101.98		100.79		
T=180	103.56		100.40		
Minoxidil 1%, Finasteride 0.1%					
T= 0	100.00			100.00	
T =60	93.04			98.79	
T = 90	Precipitate formed				
T = 120					
T=180					
Minoxidil 7%, Finasteride 0.25%					
T= 0	100.00			100.00	
T =60	99.61			96.07	
T = 90	95.68			93.80	
T = 120	Precipitate formed				
T=180					
Minoxidil 1%, Ketoconazole 0.5%					
T= 0	100.00				100.00
T =60	95.58				96.85
T = 90	91.02				95.81
T = 120	90.81				96.34
T=180	Tested out of spec at 150 days				
Minoxidil 7%, Ketoconazole 2%					
T= 0	100.00				100.00
T =60	98.29				97.94
T = 90	99.17				97.00
T = 120	99.79				98.83
T=180	103.74				98.61

Data in TrichoSol (Individual APIs)^{10,11}

API	Elapsed Time (Days)	% Recovery (Room Temperature, 15-30 °C)			
		Low Concentration (SD)	pH	High Concentration (SD)	pH
Cetirizine HCl 0.5-2%	0	100.00 (0.32)	4.85	100.00 (0.14)	5.03
	7	101.10 (0.15)	4.79	98.85 (0.19)	4.96
	14	100.46 (0.31)	4.81	100.25 (0.43)	4.99
	30	100.27 (0.31)	4.87	99.37 (0.43)	5.01
	60	100.53 (0.30)	4.88	98.83 (0.48)	5.00
	90	99.95 (4.86)	4.86	99.23 (0.53)	5.02
	120	100.72 (0.32)	4.73	100.38 (0.45)	4.95
	150	99.28 (0.36)	4.81	102.16 (0.40)	4.99
Dutasteride 0.1-0.25%	180	97.00 (0.94)	4.64	108.15 (0.74)	4.78
	0	100.00 (1.57)	2.25	100.00 (1.67)	2.25
	7	99.42 (1.05)	2.25	90.90 (1.67)	2.22
	14	98.67 (1.44)	2.24	100.13 (0.45)	2.23
	30	99.37 (0.10)	2.32	100.61 (0.24)	2.25
	60	95.17 (0.56)	2.26	101.02 (0.40)	2.20
	90	95.03 (0.99)	2.26	100.59 (0.44)	2.15
	120	94.86 (0.38)	2.25	99.55 (0.37)	2.16
150	93.87 (0.94)	2.28	89.91 (1.61)	2.11	

	180	93.62 (1.32)	2.25	-	-
Hydrocortisone Acetate 0.5-1.0%	0	100.00 (0.93)	2.13	100.00 (0.37)	2.12
	7	100.48 (0.83)	2.11	100.19 (0.56)	2.13
	14	100.11 (0.23)	2.12	100.07 (0.28)	2.12
	30	99.94 (0.53)	2.23	100.80 (0.73)	2.19
	60	100.81 (0.45)	2.23	100.71 (0.66)	2.18
	90	100.65 (0.49)	2.33	99.73 (0.75)	2.45
	120	103.36 (1.16)	2.38	101.15 (0.99)	2.42
	150	102.15 (0.34)	2.36	100.77 (0.23)	2.43
	180	92.83 (0.46)	2.32	-	-
Nicotinamide 0.25 – 0.5%	0	100.00 (0.12)	5.28	100.00 (0.47)	6.05
	7	101.01 (0.12)	5.26	100.00 (0.91)	5.95
	14	101.34 (0.64)	5.30	100.00 (0.91)	6.03
	30	102.64 (0.84)	5.44	100.76 (0.65)	5.34
	60	101.31 (0.49)	5.35	99.77 (0.32)	5.43
	90	101.48 (0.77)	5.30	98.28 (0.37)	5.49
	120	102.41 (0.37)	5.37	98.40 (0.49)	5.55
	150	101.04 (0.65)	5.00	99.43 (0.43)	5.05
	180	98.37 (0.27)	5.01	99.52 (0.70)	5.07
Progesterone 1-2.5%	0	100.00 (0.76)	2.37	100.00 (1.55)	2.39
	7	100.39 (0.12)	2.25	97.60 (0.13)	2.34
	14	100.16 (0.21)	2.38	91.52 (0.04)	2.37
	30	98.90 (0.40)	2.31	91.85 (0.54)	2.33
	60	98.09 (0.72)	2.29	91.41 (1.33)	2.32
	90	97.40 (0.82)	2.48	90.41 (1.03)	2.49
	120	98.75 (1.12)	2.46	89.46 (1.31)	2.47
	180	97.73 (0.33)	2.54	-	-
Pyridoxine HCl 0.25-5%	0	100.00 (0.95)	2.10	100.00 (1.85)	1.97
	7	100.98 (0.56)	2.19	98.19 (0.49)	2.03
	14	101.38 (0.17)	2.23	97.71 (0.12)	2.07
	30	101.99 (0.55)	2.21	99.23 (0.20)	2.05
	60	101.60 (0.41)	2.13	97.96 (0.23)	1.96
	90	101.80 (0.44)	2.23	98.76 (0.35)	2.21
	120	102.89 (0.65)	2.13	99.86 (0.44)	2.29
	150	102.32 (0.30)	2.13	96.87 (1.12)	2.11
	180	103.34 (0.66)	2.14	95.21 (0.27)	1.96
Minoxidil 1-7%	0	100.00 (0.26)	2.62	100.00 (0.16)	3.71
	7	99.36 (0.13)	2.64	100.97 (0.14)	3.74
	14	99.14 (0.26)	2.64	98.18 (0.32)	3.77
	30	98.03 (0.61)	2.72	100.63 (0.13)	3.78
	60	98.38 (0.37)	2.76	100.57 (0.13)	3.90
	90	95.95 (0.14)	2.72	97.28 (0.17)	3.67
	120	95.35 (0.15)	2.67	97.11 (0.18)	3.63
	150	95.41 (0.45)	2.70	98.33 (0.29)	3.69
	180	77.78 (0.84)	2.85	94.63 (1.36)	3.74
	380	-	-	97.53 (0.39)	3.79

SD= Standard Deviation

Data in TrichoSol (Combination Study)

Formulation	Minoxidil (%)	Finasteride (%)	Fluocinolone Ac (%)	Clobetasol Propionate (%)	Dutasteride (%)	Ketoconazole (%)
Minoxidil 2%, Finasteride 0.1%, Fluocinolone Ac 0.01%						
T= 0	101.5	102.7	109.6			
T=60	104.5	101.3	101.2			
T= 90	99.5	110.3 ¹	109.9			
T= 120	99.0	103.9	98.0			
T=180	100.5	104.9	95.5			
Minoxidil 10%, Finasteride 0.5%, Fluocinolone Ac 0.01%						
T= 0	102.7	91.4	95.1			
T=60	100.7	98.9	101.1			
T= 90	97.5	103.9	97.6			

T = 120	105.8	98.9	103.3			
T=180	104.3	102.5	93.1			
Minoxidil 2%, Finasteride 0.1%						
T= 0	100.0	104.8				
T =60	103.5	98.7				
T = 90	100.0	109.5				
T = 120	102.6	106.6				
T=180	101.0	105.2				
Minoxidil 10%, Finasteride 0.5%						
T= 0	101.1	103.5				
T =60	104.4	95.5				
T = 90	101.7	107.6				
T = 120	99.5%	105.9				
T=180	106.5	105.5				
Minoxidil 1%, Clobetasol 0.01%						
T= 0	100.00			100.00		
T =60	101.58			101.21		
T = 90	99.42			98.23		
T = 120	101.83			105.95		
T=180	99.92			104.93		
Minoxidil 7%, Clobetasol 0.05%						
T= 0	100.00			100.00		
T =60	101.06			97.80		
T = 90	98.60			97.80		
T = 120	103.36			94.86		
T=180	105.15			96.15		
Minoxidil 5%, Dutasteride 0.1%						
T= 0	100.00				100.00	
T =60	98.86				103.53	
T = 90	99.63				103.15	
T = 120	98.08				102.09	
T=180	Out of spec at 150 days					
Minoxidil 7%, Dutasteride 0.25%						
T= 0	100.00				100.00	
T =60	102.02				94.21	
T = 90	103.29				95.88	
T = 120	103.81				96.07	
T=180	Out of spec at 150 days					
Minoxidil 1%, Ketoconazole 0.5%						
T= 0	100.00					100.00
T =60	97.91					96.94
T = 90	95.23					96.71
T = 120	96.81					94.57
T=180	83.15					95.78
Minoxidil 7%, Ketoconazole 2%						
T= 0	100.00					100.00
T =60	99.61					96.80
T = 90	99.40					97.52
T = 120	101.06					96.80
T=180	101.34					98.66
Tested out of spec at 180 days						

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