MEDISCA®

STABILITY ASSESSMENT OF COMPOUNDED PREPARATIONS

Bracketed Testosterone 0.02-25% in VersaPro™ Gel Base

Testosterone is an essential hormone that is produced endogenously and is critical for sexual, cognitive and body function, including maintenance of bone density, fat distribution, muscle strength and mass, facial and body hair, red blood cell production, sex drive and sperm production (in men). Although Testosterone levels tend to gradually decline with age, congenital or acquired conditions, such as Klinefelter syndrome, hemochromatosis, pituitary disorders, inflammatory disease, obesity, cancer treatment and injury to the testes can lead to diminished production of Testosterone, referred to as hypogonadism.[1,2] Studies have shown topical administration of Testosterone to be an effective means for helping to restore Testosterone levels through Testosterone Restoration Therapy (TRT).[3] Short-term treatment with androgens in postmenopausal women has also been reported to improve libido and mood and reduce hot flashes.[4] Compounded Testosterone for topical application offers ease of administration and flexible dosing in order to provide patients with much needed customized treatment. Determining the stability of a compounded medication is best practice and is highly sought after analytical data.

In this study, we evaluated the physical, chemical, and microbiological stability overtime of two different concentrations of Testosterone (0.02% and 25% w/w) compounded in VersaPro™ Gel Base (MEDISCA). The formulations underwent forced degradation studies to develop validated, stability-indicating methods. The stability of the formulations was evaluated using tightly-closed, light resistant containers stored at controlled room temperature (25°C). Physicochemical characteristics were analyzed at predetermined time points (0, 30, 60, 90, 120, 150 and 180 days) and each formula tested had the organoleptic properties inspected, the pH and viscosity measured, and the Testosterone concentration assayed using a validated stability-indicating HPLC-UV method. The antimicrobial effectiveness of the preservative system was also tested using a validated method based on *USP <51>*. Our results showed that the concentration of the bracketed Testosterone formulations remained within the *United States Pharmacopeia* specification (90 to 110%) for at least 180 days at the tested condition. No changes in organoleptic properties were observed and there was no significant change in pH or viscosity (Table 1). Antimicrobial effectiveness of the preservative system also met the *USP* requirements for both concentrations (Table 2). In conclusion, Testosterone in VersaPro™ Gel Base with a bracketed range of 0.02 – 25% was found to be physically, chemically and microbiologically stable for up to 180 days when stored at room temperature in tightly-closed light resistant containers. Therefore, an extended beyond-use date of 180 days can be assigned to this bracketed range of Testosterone concentrations if the same vehicle and conditions are respected.

Table 1. Stability of Testosterone 0.02% and 25% in VersaPro™ Gel Base at 25 °C for 180 days.

Time Points	Testosterone LOW Concentration	Testosterone HIGH Concentration
	0.02%	25%
	Hormone Concentrations (%)[a]	
Initial	100 ± 0.05	100 ± 0.01
30 days	99.20 ± 0.10	99.88 ± 0.03
60 days	99.48 ± 0.02	101.50 ± 0.03
90 days	99.70 ± 0.00	99.91 ± 0.07
120 days	98.86 ± 0.05	100.85 ± 0.00
150 days	99.68 ± 0.07	100.72 ± 0.03
180 days	96.62 ± 0.00	100.53 ± 0.06
	pH	
Initial	8.31	8.47
30 days	8.23	8.45
60 days	8.16	8.29
90 days	7.96	8.43
120 days	8.47	8.49
150 days	7.94	8.39
180 days	7.98	8.48
	Viscosity (cPs)	
Initial	208,000	– [b]
30 days	214,000	346,000
60 days	212,000	334,000
90 days	238,000	330,000
120 days	176,000	342,000
150 days	224,000	358,000
180 days	188,000	354,000

[a] Reported as Mean ± SD of duplicate determinations.
[b] Instrument error in viscosity reading at T0 (value not included).

Table 2. Antimicrobial Preservative Effectiveness of Testosterone 0.02% and 25% in VersaPro™ Gel Base.

Identification	Method	Test Performed	Specification[a]	Result[b]
Testosterone 0.02% in VersaPro™ Gel Base	USP <51>	Antimicrobial Effectiveness Testing	Category 2	Pass
Testosterone 25% in VersaPro™ Gel Base	USP <51>	Antimicrobial Effectiveness Testing	Category 2	Pass

[a] Category 2 includes topically used products made with aqueous bases or vehicles, such as emulsions.
[b] Product must meet the following for (i) Bacteria: NLT 2.0 log reduction from initial count at 14 days; no increase from 14 days count to 28 days. (ii) Yeast and mold: No increase from the initial calculated count at 14 and 28 days.

MEDISCA Network Formula:

F 009 191 Testosterone 0.02%-25% Topical Cream (Emulsion, 500g). www.medisca.com/studies/buds?tab=bud-databank

References:
1 Kumar P, Kumar N, Thakur DS, Patidar, A. Male hypogonadism: Symptoms and treatment. *J Adv Pharm Technol Res*. 2010. 1(3): 297-301.
2 Miller KK. Androgen Deficiency in Women. *J Clin Endocrinol Metab*. 2001. 86(6): 2395-2401.
3 Cutter, CB. Compounded Percutaneous Testosterone Gel: Use And Effects in Hypogonadal Men. *J Am Board Fam Pract*. 2001. 14(1): 22-32.
4 Tan RS. Testosterone Replacement Therapy for Female Androgen Insufficiency Syndrome. *Int J Pharm Compd*. 2005. 9(4): 259-264.

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