Efficacy of deucravacitinib in plaque psoriasis across a range of body surface area involvement: post hoc analysis of the randomized, double-blinded, placebo-controlled, phase 3b/4 PSORIATYK SCALP trial

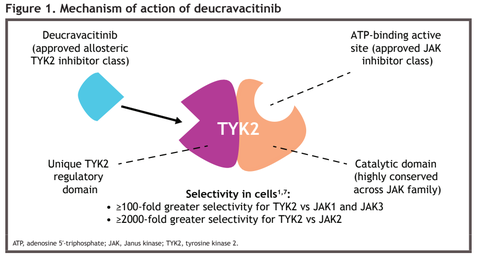
Andrew Blauvelt,[1] Diamant Thaçi,[2] David M. Pariser,[3] Andrew Napoli,[4] Eugene Balagula,[4] Chun-Yen Cheng,[4] Rachel Dyme,[4] Linda Stein Gold,[5] Mark Lebwohl[6]

[1]Blauvelt Consulting, Portland, OR, USA; [2]Institute and Comprehensive Center for Inflammation Medicine, University of Lübeck, Lübeck, Germany; [3]Eastern Virginia Medical School and Virginia Clinical Research, Norfolk, VA, USA; [4]Bristol Myers Squibb, Princeton, NJ, USA; [5]Henry Ford Health System, West Bloomfield, MI, USA; [6]Icahn School of Medicine at Mount Sinai, New York, NY, USA

Synopsis

- Tyrosine kinase 2 (TYK2) is an intracellular enzyme that mediates signaling of select inflammatory cytokines (eg, interleukin [IL]-23, IL-12, Type I interferons [IFNs])[1]
  - IL-23 and Type I IFNs are involved in psoriasis pathogenesis[1]
- Deucravacitinib, an oral, selective, allosteric TYK2 inhibitor, is approved in the US, EU, and other countries for the treatment of adults with moderate to severe plaque psoriasis who are candidates for systemic therapy[2-6]
- Deucravacitinib uniquely binds to the TYK2 regulatory domain rather than to the catalytic domain where Janus kinase (JAK) 1,2,3 inhibitors bind[1,7] (**Figure 1**), driving its selectivity for TYK2 and representing the first in a new class of oral drugs

Figure 1. Mechanism of action of deucravacitinib



ATP, adenosine 5′-triphosphate; JAK, Janus kinase; TYK2, tyrosine kinase 2.

- Deucravacitinib demonstrated a robust efficacy and safety profile in the global phase 3 POETYK PSO-1 (NCT03624127) and POETYK PSO-2 (NCT03611751) trials in patients with moderate to severe plaque psoriasis[8,9]
- Scalp psoriasis, which occurs in up to 80% of patients with psoriasis and is associated with itching, flaking, pain, and bleeding, disproportionately reduces quality of life and is challenging to treat with topical agents[10-16]
- In the POETYK PSO-1 and PSO-2 subpopulation of patients with moderate to severe scalp psoriasis (scalp-specific Physician Global Assessment [ss-PGA] score ≥3 at baseline), deucravacitinib was significantly more efficacious than placebo based on achievement of an ss-PGA score of 0 (clear) or 1 (almost clear) (ss-PGA 0/1) and ≥90% improvement from baseline in Psoriasis Scalp Severity Index (PSSI) at Week 16[16]
- PSORIATYK SCALP (NCT05478499) is an ongoing, 52-week, multicenter, phase 3b/4 trial evaluating deucravacitinib in patients with moderate to severe scalp psoriasis, including those with a range of total body surface area (BSA) involvement (≥3%)
  - Patients in this group are candidates for systemic therapy according to the American Academy of Dermatology/National Psoriasis Foundation and International Psoriasis Council guidelines[11,14]
  - PSORIATYK SCALP achieved its primary endpoint, with a significantly greater proportion of patients treated with deucravacitinib achieving ss-PGA 0/1 at Week 16 compared with patients receiving placebo; PSORIATYK SCALP also achieved all key secondary endpoints[17]

Objective

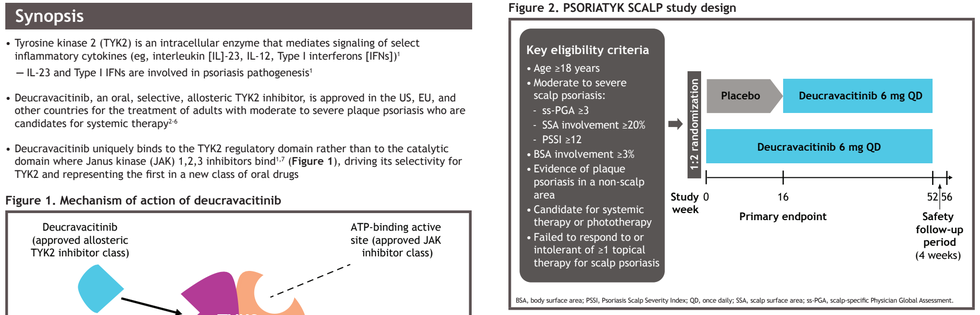
- This PSORIATYK SCALP post hoc analysis evaluated the efficacy of deucravacitinib in improving overall body psoriasis in patients with a range of BSA involvement (≥3%)

Methods

Study design

- PSORIATYK SCALP is a phase 3b/4, multicenter, randomized, double-blinded, placebo-controlled trial designed to evaluate the efficacy and safety of deucravacitinib in patients with moderate to severe scalp psoriasis (**Figure 2**)
  - Patients were randomized 1:2 to oral placebo or deucravacitinib 6 mg once daily (QD)
  - At Week 16, all patients were switched to open-label deucravacitinib 6 mg QD through Week 52
- Stratification factors included in randomization:
  - Prior use of biologic therapy for psoriasis, psoriatic arthritis, or other inflammatory disease (yes/no)
  - Body weight (≥90 kg/<90 kg)

Figure 2. PSORIATYK SCALP study design



BSA, body surface area; PSSI, Psoriasis Scalp Severity Index; QD, once daily; SSA, scalp surface area; ss-PGA, scalp-specific Physician Global Assessment.

- PSORIATYK SCALP included patients with moderate to severe scalp psoriasis defined by more focused and objective inclusion criteria and less extensive overall body psoriasis (BSA involvement 3%-10%) compared with the phase 3 POETYK PSO-1 and PSO-2 trials

Outcomes

- Static Physician Global Assessment (sPGA) score of 0 (clear) or 1 (almost clear) with ≥2-point reduction from baseline (sPGA 0/1)
- sPGA×BSA score
  - 75%/90% improvement from baseline in the sPGA×BSA score (sPGA×BSA 75/90)
  - Mean change and mean percentage change from baseline
- Psoriasis Area and Severity Index (PASI)
  - Mean change and mean percentage change from baseline
- Mean change from baseline in whole-body itch numeric rating scale (NRS)

Statistical analysis

- Efficacy was analyzed after all randomized patients had completed their Week 16 visit or had discontinued treatment prior to Week 16
- Nonresponder imputation (NRI) was used for binary efficacy endpoints for patients who had missing endpoint data
  - 95% confidence intervals (CIs) of the individual response rates were estimated using the exact binomial method
  - *P* values of the odds ratios were obtained using a stratified Cochran-Mantel-Haenszel test with randomization stratification factors
- Modified baseline observation carried forward (mBOCF) was used to impute missing data for continuous outcomes; patients who discontinued treatment due to lack of efficacy or adverse events had the baseline observation carried forward for all subsequent analysis weeks after the point of discontinuation, and patients who discontinued treatment due to other reasons or a missing value had the most recent valid observation carried forward
- Adjusted means, 95% CIs, and *P* values were derived from an analysis of covariance model with treatment and randomization stratification factors as fixed effects and baseline value as a covariate
- All analyses are post hoc and all *P* values are nominal

Results

Baseline patient demographics and disease characteristics

- Baseline characteristics were similar in the placebo and deucravacitinib groups (**Table 1**)
  - Mean PASI: 9.4 vs 10.2
  - Mean whole-body itch NRS: 5.8 vs 5.8
- Mean baseline BSA involvement was similar in the placebo and deucravacitinib groups (10.0% vs 10.5%, respectively), and most patients had total BSA involvement in the 3%-10% range (placebo, 74.5%; deucravacitinib, 68.0%)

Table 1. Baseline patient demographics and disease characteristics

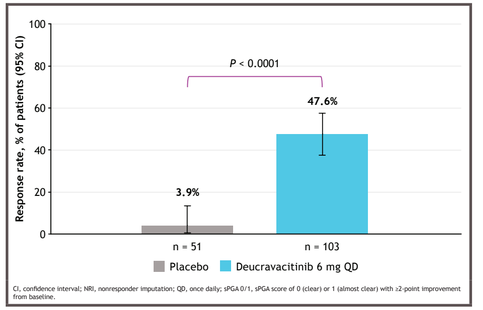
Parameter	Placebo (n = 51)	Deucravacitinib (n = 103)
Age, mean (SD), y	43.2 (13.1)	42.8 (15.7)
Weight, mean (SD), kg	88.2 (27.6)	89.3 (23.8)
Body mass index, mean (SD), kg/m²	29.2 (7.0)	30.1 (7.1)
Female, n (%)	20 (39.2)	45 (43.7)
Race, n (%)		
White	47 (92.2)	93 (90.3)
Asian	2 (3.9)	3 (2.9)
Black or African American	2 (3.9)	5 (4.9)
Other	0	2 (1.9)
Scalp psoriasis duration, mean (SD), y	12.4 (9.6)	16.4 (11.7)
Prior systemic therapy, n (%)		
Yes	27 (52.9)	54 (52.4)
Systemic biologic	16 (31.4)	37 (35.9)
Systemic non-biologic	11 (21.6)	17 (16.5)
No prior systemic therapy	24 (47.1)	49 (47.6)
ss-PGA score, n (%)		
3 (moderate)	32 (62.7)	76 (73.8)
4 (severe)	19 (37.3)	27 (26.2)
PSSI score, mean (SD)	32.2 (13.7)	33.5 (12.5)
ss-NRS itching score, mean (SD)	6.4 (1.8)	6.4 (2.3)
sPGA score, n (%)		
2 (mild)	4 (7.8)	7 (6.8)
3 (moderate)	42 (82.4)	81 (78.6)
4 (severe)	5 (9.8)	15 (14.6)
BSA involvement, mean (SD)	10.0 (8.1)	10.5 (9.6)
3%-10%, n (%)	38 (74.5)	70 (68.0)
>10%, n (%)	13 (25.5)	33 (32.0)
PASI, mean (SD)	9.4 (5.6)	10.2 (6.7)
Whole-body itch NRS, mean (SD)	5.8 (2.4)	5.8 (2.8)

BSA, body surface area; NRS, numeric rating scale; PASI, Psoriasis Area and Severity Index; PSSI, Psoriasis Scalp Severity Index; SD, standard deviation; sPGA, static Physician Global Assessment; ss-NRS, scalp-specific NRS; ss-PGA, scalp-specific Physician Global Assessment.

Efficacy

- At Week 16, a significantly higher proportion of patients receiving deucravacitinib vs placebo achieved sPGA 0/1 (**Figure 3**)

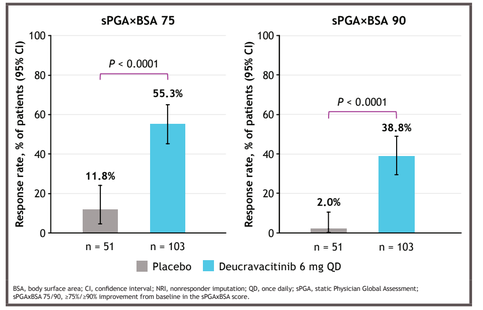
Figure 3. sPGA 0/1 response rates at Week 16 (NRI)



CI, confidence interval; NRI, nonresponder imputation; QD, once daily; sPGA 0/1, sPGA score of 0 (clear) or 1 (almost clear) with ≥2-point improvement from baseline.

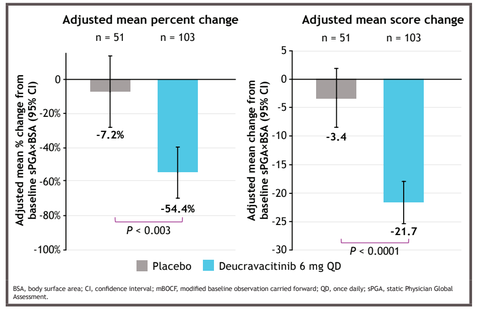
- Higher sPGA×BSA 75 and 90 response rates (**Figure 4**) and greater decreases from baseline in sPGA×BSA score (**Figure 5**) were achieved at Week 16 with deucravacitinib vs placebo

Figure 4. sPGA×BSA 75 and 90 response rates at Week 16 (NRI)



BSA, body surface area; CI, confidence interval; NRI, nonresponder imputation; QD, once daily; sPGA, static Physician Global Assessment; sPGAxBSA 75/90, ≥75%/≥90% improvement from baseline in the sPGAxBSA score.

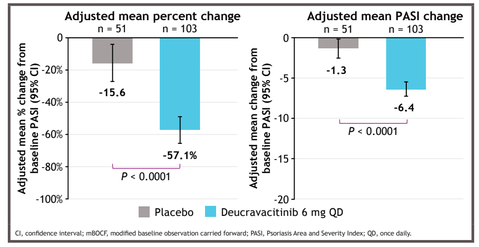
Figure 5. Change from baseline in sPGA×BSA score at Week 16 (mBOCF)



BSA, body surface area; CI, confidence interval; mBOCF, modified baseline observation carried forward; QD, once daily; sPGA, static Physician Global Assessment.

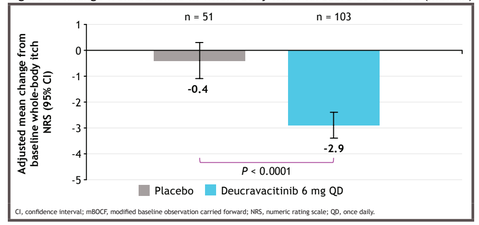
- Patients treated with deucravacitinib had greater decreases from baseline in PASI (**Figure 6**) and in whole-body itch NRS (**Figure 7**) score at Week 16 compared with patients who received placebo

Figure 6. Change from baseline in PASI at Week 16 (mBOCF)



CI, confidence interval; mBOCF, modified baseline observation carried forward; PASI, Psoriasis Area and Severity Index; QD, once daily.

Figure 7. Change from baseline in whole-body itch NRS score at Week 16 (mBOCF)



CI, confidence interval; mBOCF, modified baseline observation carried forward; NRS, numeric rating scale; QD, once daily.

Conclusions

- In this phase 3b/4 scalp psoriasis-specific trial, deucravacitinib was efficacious in improving overall body plaque psoriasis
- Efficacy rates in overall psoriasis were consistent with those reported in the phase 3 POETYK PSO-1 and PSO-2 trials, despite PSORIATYK SCALP enrolling patients with less extensive overall psoriasis (70% of population had baseline total BSA 3%-10%)[8,9]

References

1. Burke JR, et al. *Sci Transl Med*. 2019;11:eaaw1736. 2. Sotyktu [package insert]. Princeton, NJ: Bristol Myers Squibb; September 2022. 3. Sotyktu [European summary of product characteristics]. Dublin, Ireland: Bristol Myers Squibb EEIG; December 2023. 4. Sotyktu [package insert]. Tokyo, Japan: Bristol Myers Squibb K.K.; September 2022. 5. Sotyktu [product monograph]. Montreal, Canada: Bristol Myers Squibb Canada Co.; November 2022. 6. Sotyktu [product information]. Mulgrave, VIC, Australia: Bristol Myers Squibb Australia Pty. Ltd.; December 2022. 7. Wrobleski ST, et al. *J Med Chem*. 2019;62:8973-8995. 8. Armstrong AW, et al. *J Am Acad Dermatol*. 2023;88:29-39. 9. Strober B, et al. *J Am Acad Dermatol*. 2023;88:40-51. 10. Kragballe K. *Curr Probl Dermatol*. 2009;38:160-171. 11. Chan CS, et al. *J Am Acad Dermatol*. 2009;60:962-971. 12. Rich P, et al. *J Am Acad Dermatol*. 2016;74:134-142. 13. Papp K, et al. *J Eur Acad Dermatol Venereol*. 2007;21:1151-1160. 14. Kragballe K, et al. *J Dermatol Treat*. 2013;24:188-192. 15. Mason AR, et al. *Br J Dermatol*. 2013;169:519-527. 16. Blauvelt A, et al. *J Am Acad Dermatol*. 2024;90:775-782. 17. Callis Duffin K, et al. Presented at the 33rd EADV Congress; 25-28 September 2024; Amsterdam, Netherlands.

Acknowledgments

- This study was sponsored by Bristol Myers Squibb
- Writing and editorial assistance was provided by Kelly Miller, MPH, of Peloton Advantage, LLC, an OPEN Health company, funded by Bristol Myers Squibb

Disclosures

AB: Speaker (with honoraria): Lilly and UCB; Scientific adviser (with honoraria): AbbVie, Abcentra, Aclaris, Affibody, Aligos, Almirall, Alumis, Amgen, AnaptysBio, Apogee, Arcutis, Arena, Aslan, Athenex, Bluefin Biomedicine, Boehringer Ingelheim, Bristol Myers Squibb, Cara Therapeutics, Cellidex, CTI BioPharma, Dermavant, EcoR1, Escient, Evelo Biosciences, Evommune, Forte Biosciences, Galderma, Highlightll Pharma, Incyte, InnoventBio, Janssen, Landos, Leo Pharma, Lilly, Lipidio, Microbion, Merck, Monte Rosa Therapeutics, Nektar, Novartis, Overtone Therapeutics, Paragon, Pfizer, Q32 Bio, Rani, Rapt, Regeneron, Sanofi Genzyme, Spherix Global Insights, Sun Pharma, Takeda, TLL Pharmaceutical, TrialSpark, UCB, Union, Ventyx, Viblome, and Xencor; Clinical study investigator (institution received clinical study funds): AbbVie, Acelyrin, Aldeyra, Alimirall, Alumis, Amgen, Arcutis, Athenex, Boehringer Ingelheim, Bristol Myers Squibb, Concert, Dermavant, DermBiont, Evelo Biosciences, Evommune, Galderma, Incyte, Janssen, Leo Pharma, Lilly, Merck, Novartis, Pfizer, Regeneron, Sanofi, Sun Pharma, Takeda, UCB, and Ventyx; Stock owner: Lipidio and Oruka. **DT:** Research support and principal investigator (clinical trial funds to institution): AbbVie, Almirall, Amgen, Boehringer Ingelheim, Bristol Myers Squibb, Galderma, Janssen-Cilag, Leo Pharma, Lilly, Novartis, Pfizer, Regeneron, Sanofi, and UCB; Consultant: AbbVie, Almirall, Boehringer Ingelheim, Bristol Myers Squibb, Leo Pharma, Novartis, Pfizer, and UCB; Lecturer: AbbVie, Almirall, Amgen, Boehringer Ingelheim, Bristol Myers Squibb, Janssen, Leo Pharma, Lilly, Novartis, Pfizer, Roche-Posay, Sanofi, Target BWE, and UCB; Scientific advisory board: AbbVie, Amgen, Boehringer Ingelheim, Bristol Myers Squibb, Janssen-Cilag, Leo Pharma, Lilly, Novartis, Pfizer, Sanofi, and UCB. **DMP:** Research funds and honoraria (funds to institution): Novartis, Pfizer, Regeneron; Honoraria: Regeneron, Sanofi. **AN, EB, CYC, and RD:** Employees and shareholders: Bristol Myers Squibb. **LSG:** Consultant, advisory board member, and/or speaker: AbbVie, Amgen, Arcutis, Aslan, Bausch Health, Boehringer Ingelheim, Bristol Myers Squibb, Dermavant, Dermira, Eli Lilly, Galderma, Incyte, Janssen, Leo Pharma, Novartis, Pfizer, Regeneron, Sanofi Genzyme, Sun Pharma, and UCB. **ML:** Research funds on behalf of Mount Sinai: AbbVie, Arcutis, Avotres, Boehringer Ingelheim, Cara Therapeutics, Cerio, Dermavant, Incyte, Inozyme, Janssen, Lilly, Pfizer, Regeneron, and UCB; Consultant: Almirall, Altrubio, Apogee, Arcutis, AstraZeneca, Atomwise, Avotres, Boehringer Ingelheim, Bristol Myers Squibb, Castle Biosciences, Celltrion, CorEvitas Psoriasis Registry, Dermavant, Dermsquared, Evommune, Facilitation of International Dermatology Education, Forte Biosciences, Galderma, Genentech, Incyte, Leo Pharma, Meiji Seika Pharma, Mindera Health, Pfizer, Regeneron, Seanergy, Strata, Takeda, Trevi, and Verrica.

Scientific Content on Demand

To view a copy of this poster:

Scan the QR code via a barcode reader application

QR codes are valid for 1 year after the congress presentation date.

Presented at the 44th Annual Fall Clinical Dermatology Conference; October 24-27, 2024; Las Vegas, NV

Email: blauveltconsults@gmail.com