Deucravacitinib, an oral, selective, allosteric tyrosine kinase 2 (TYK2) inhibitor, in patients with moderate to severe scalp psoriasis: time to meaningful improvement in patient-reported outcomes in a phase 3b/4, multicenter, randomized, double-blinded, placebo-controlled study (PSORIATYK SCALP)

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Introduction

- Scalp psoriasis, which may occur 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[1,2]
- Deucravacitinib, an oral, selective, allosteric tyrosine kinase 2 (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[3-7]
- PSORIATYK SCALP, a phase 3b/4, multicenter, randomized, double-blinded, placebo-controlled study evaluated the efficacy and safety of deucravacitinib in patients with moderate to severe scalp psoriasis, including those with less extensive overall psoriasis (body surface area [BSA] involvement ≥3%)
  - Primary and key secondary endpoint results are reported elsewhere; here, we report time to initial response for patient-reported outcomes (PROs)

Objective

- To evaluate the time to meaningful improvement in PROs in patients treated with deucravacitinib vs placebo in PSORIATYK SCALP

Methods

Study design

- Patients with moderate to severe scalp psoriasis were randomized 1:2 to once-daily (QD) placebo or deucravacitinib 6 mg
  - At Week 16, all patients were switched to open-label deucravacitinib 6 mg QD through Week 52

Study eligibility

- Participants were eligible for study inclusion if they:
  - Were ≥18 years of age
  - Were a candidate for systemic therapy or phototherapy
  - Had moderate to severe scalp psoriasis (must meet all 3)
    - Scalp-specific Physician Global Assessment score ≥3
    - Scalp surface area involvement ≥20%
    - Psoriasis Scalp Severity Index score ≥12
  - BSA involvement ≥3%
  - Evidence of plaque psoriasis in a non-scalp area
  - Failed to respond to, or intolerant of, ≥1 topical therapy for scalp psoriasis

Study endpoints

- Meaningful improvement in PROs were evaluated using scalp-specific itch, pain and flaking, and whole-body itch numeric rating scales (NRS), Scalpdex, and Dermatology Life Quality Index (DLQI)
- Meaningful improvement was defined as:
  - NRS measures (≥4-point improvement from baseline among patients with baseline scores ≥4)[8]
  - DLQI (≥4-point improvement from baseline among patients with baseline scores ≥4)[9]
  - Scalpdex (≥20-point improvement from baseline among patients with baseline scores ≥20)[10,11]
    - A distribution-based threshold in the absence of established meaningful change thresholds

Analysis

- Times to response in these PROs were estimated with Kaplan-Meier methods
  - Hazard ratios (HRs) and confidence intervals (CIs) for response up to 16 weeks were calculated using Cox proportional hazards regression models
  - Nonresponder imputation was used to impute missing data
- Results are reported for the overall population and for patients with baseline BSA 3%–10% and BSA >10%

Results

Baseline characteristics

- Baseline demographics, disease severity, and PROs were similar between treatment arms in the overall population; baseline PRO scores by BSA subgroups are shown in **Table 1**

Table 1. Baseline characteristics, overall population, BSA subgroups

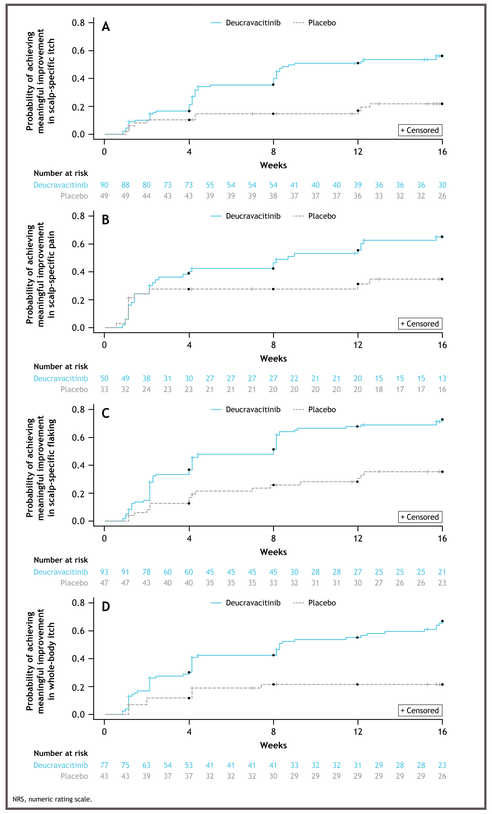
Characteristic	Overall population		BSA 3%-10%		BSA >10%	
	Placebo (n = 51)	Deucravacitinib (n = 103)	Placebo (n = 38)	Deucravacitinib (n = 70)	Placebo (n = 13)	Deucravacitinib (n = 33)
Age, years, mean (SD)	43.2 (13.1)	42.8 (15.7)	41.8 (13.1)	42.0 (15.2)	47.5 (12.5)	44.3 (16.9)
Female, n (%)	20 (39.2)	45 (43.7)	18 (47.4)	33 (47.1)	2 (15.4)	12 (36.4)
White, n (%)	47 (92.2)	93 (90.3)	36 (94.7)	64 (91.4)	11 (84.6)	29 (87.9)
Weight, kg, mean (SD)	88.2 (27.6)	89.3 (23.8)	86.3 (24.3)	88.7 (25.0)	93.8 (36.2)	90.6 (21.3)
Scalp psoriasis duration, years, mean (SD)	12.4 (9.6)	16.4 (11.7)	12.0 (9.7)	15.4 (11.1)	13.7 (9.8)	18.4 (12.9)
BSA involvement, mean (SD)	10.0 (8.1)	10.5 (9.6)	6.1 (2.1)	5.8 (2.0)	21.5 (8.1)	20.5 (11.5)
PASI, mean (SD)	9.4 (5.6)	10.2 (6.7)	7.0 (3.1)	6.9 (3.1)	16.5 (5.1)	17.4 (6.6)
sPGA, n (%)						
2	4 (7.8)	7 (6.8)	4 (10.5)	6 (8.6)	0 (0.0)	1 (3.0)
3	42 (82.4)	81 (78.6)	31 (81.6)	56 (80.0)	11 (84.6)	25 (75.8)
4	5 (9.8)	15 (14.6)	3 (7.9)	8 (11.4)	2 (15.4)	7 (21.2)
SSA, mean (SD)	53.0 (24.0)	57.6 (23.1)	54.4 (24.4)	53.8 (22.5)	48.8 (23.0)	65.6 (22.7)
PSSI, mean (SD)	32.2 (13.7)	33.5 (12.5)	32.4 (13.8)	32.1 (11.8)	31.5 (14.0)	36.5 (13.7)
ss-PGA, n (%)						
3	32 (62.7)	76 (73.8)	23 (60.5)	56 (80.0)	9 (69.2)	20 (60.6)
4	19 (37.3)	27 (26.2)	15 (39.5)	14 (20.0)	4 (30.8)	13 (39.4)
Scalp-specific itch NRS, mean (SD)	6.4 (1.8)	6.4 (2.3)	6.4 (1.8)	6.3 (2.4)	6.5 (2.0)	6.5 (2.0)
Scalp-specific pain NRS, mean (SD)	4.5 (3.0)	4.0 (2.8)	4.9 (2.9)	3.8 (2.8)	3.3 (2.9)	4.2 (2.9)
Scalp-specific flaking NRS, mean (SD)	6.7 (2.2)	7.0 (2.3)	6.9 (2.1)	7.0 (2.3)	5.9 (2.3)	6.8 (2.4)
Whole-body itch NRS, mean (SD)	5.8 (2.4)	5.8 (2.8)	5.4 (2.2)	5.2 (2.9)	7.0 (2.4)	7.1 (2.5)
Scalpdex total score, mean (SD)	54.4 (20.4)	55.5 (22.4)	57.9 (18.7)	57.3 (22.5)	44.1 (22.3)	51.9 (22.2)
DLQI, mean (SD)	10.2 (5.6)	11.3 (6.3)	10.4 (5.7)	11.0 (6.3)	9.5 (5.5)	12.1 (6.4)

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

Overall population

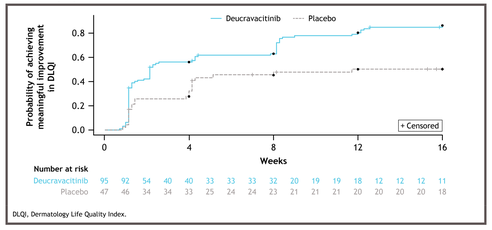
- For each PRO evaluated, a shorter median time to meaningful improvement was observed in patients receiving deucravacitinib vs placebo (**Figures 1-3**)
  - Median time to meaningful improvement in all PROs was not reached for patients receiving placebo, except for DLQI (11.7 weeks) measures
- The median time to meaningful improvement in scalp psoriasis symptoms and whole body itch ranged from 8-9 weeks for deucravacitinib; median time was not reached for placebo (HR >1; $P < 0.05$; **Figure 4**)
  - The median time to meaningful improvement in DLQI was 2.1 weeks for deucravacitinib and 11.7 weeks for placebo

Figure 1. Time to meaningful improvement in NRS measures for scalp-specific A) itch, B) pain, and C) flaking, and D) whole-body itch (overall population)



NRS, numeric rating scale.

Figure 2. Time to meaningful (4-point) improvement in DLQI (overall population)



DLQI, Dermatology Life Quality Index.

Figure 3. Time to meaningful (20-point) improvement in Scalpdex total score (overall population)

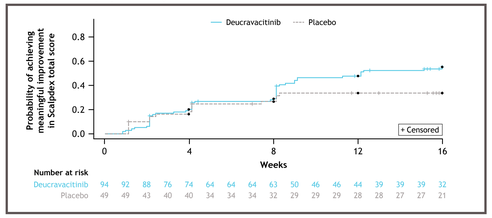
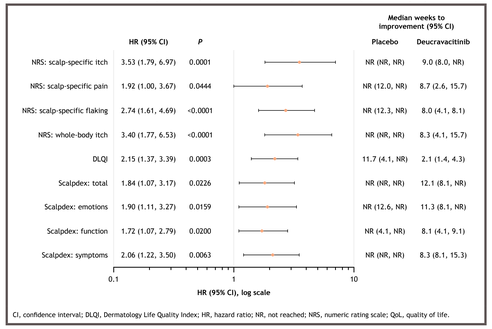


Figure 4. Hazard ratios associated with achieving meaningful improvement in patient-reported severity and QoL measures by Week 16 (overall population)

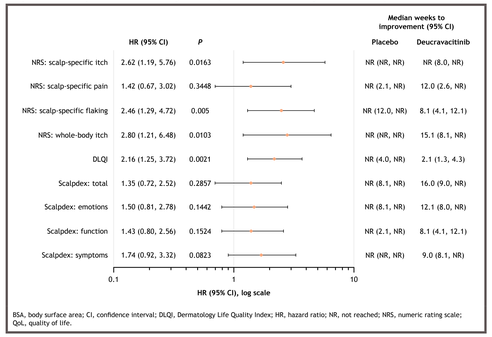


CI, confidence interval; DLQI, Dermatology Life Quality Index; HR, hazard ratio; NR, not reached; NRS, numeric rating scale; QoL, quality of life.

BSA subgroups

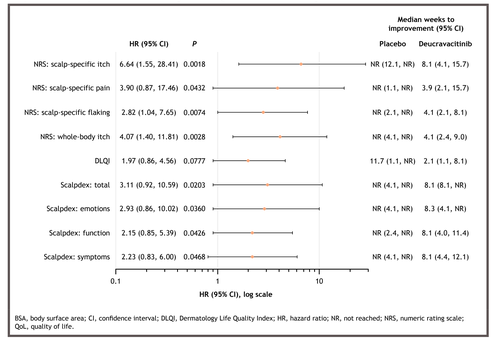
- Overall, time to meaningful improvement was shorter with deucravacitinib vs placebo for all PRO endpoints in the BSA 3%-10% subgroup (**Figure 5**) and the BSA >10% subgroup (**Figure 6**)
  - The sample size in the BSA >10% subgroup was small, therefore results should be interpreted with caution

Figure 5. Hazard ratios associated with achieving meaningful improvement in patient-reported severity and QoL measures by Week 16 (BSA 3%-10%)



BSA, body surface area; CI, confidence interval; DLQI, Dermatology Life Quality Index; HR, hazard ratio; NR, not reached; NRS, numeric rating scale; QoL, quality of life.

Figure 6. Hazard ratios associated with achieving meaningful improvement in patient-reported severity and QoL measures by Week 16 (BSA >10%)



BSA, body surface area; CI, confidence interval; DLQI, Dermatology Life Quality Index; HR, hazard ratio; NR, not reached; NRS, numeric rating scale; QoL, quality of life.

Conclusion

- Deucravacitinib was associated with a shorter time to meaningful improvement (median: ≤9.0 weeks) vs placebo (median: NR) across all evaluated PROs in the overall population, as well as in both BSA subgroups

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