



# Short-Term Effectiveness and Safety of Deucravacitinib in Psoriasis: A Multicenter Real-World Study with Scalp-Specific Outcomes—IL PSO (Italian Landscape Psoriasis)

Luciano Ibba · Sara Di Giulio · Piergiorgio Malagoli · Anna Balato · Angelo Valerio Marzano · Matteo Megna · Diego Orsini · Lidia Sacchelli · Santo Raffaele Mercuri · Emanuele Trovato · Serena Giacalone · Alexia Pedron · Marzia Caproni · Edoardo Cammarata · Aldo Cuccia · Andrea Altomare · Alexandra M. G. Brunasso · Valentina Dini · Simone Ribero · Nicola Zerbinati · Francesco Messina · Stefano Caccavale · Carlo G. Carrera · Luca Potestio · Viviana Lora · Andrea Carugno · Federico Bardazzi · Giovanni Paolino · Antonio Costanzo · Alessandra Narcisi · Mario Valenti

Received: December 26, 2025 / Accepted: February 25, 2026 / Published online: March 16, 2026  
© The Author(s) 2026

## ABSTRACT

**Introduction:** Real-world evidence on deucravacitinib in moderate-to-severe psoriasis remains limited, especially regarding difficult-to-treat areas

Luciano Ibba and Sara Di Giulio contributed equally to this article and share first authorship.

Mario Valenti and Alessandra Narcisi contributed equally to this article and share senior authorship.

L. Ibba · S. Di Giulio (✉) · A. Costanzo · A. Narcisi · M. Valenti  
Dermatology Unit, IRCCS Humanitas Research Hospital, Rozzano, Milan, Italy  
e-mail: sara.digiulio@humanitas.it

L. Ibba · S. Di Giulio · A. Costanzo · A. Narcisi · M. Valenti  
Department of Biomedical Sciences, Humanitas University, Pieve Emanuele, Milan, Italy

P. Malagoli · F. Messina  
Department of Dermatology, Dermatology Unit Azienda Ospedaliera, San Donato Milanese, Milan, Italy

A. Balato  
Dermatology Unit, University of Campania L. Vanvitelli, Naples, Italy

A. V. Marzano · C. G. Carrera  
Dermatology Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

such as scalp involvement. We conducted a multicenter retrospective study to assess the short-term effectiveness and safety of deucravacitinib in routine clinical practice, with a specific focus on scalp outcomes.

**Methods:** We enrolled 111 adult patients with moderate-to-severe psoriasis treated with deucravacitinib for at least 16 weeks across 19 different Italian dermatology units. Effectiveness was assessed in terms of PASI (Psoriasis Area and Severity Index) responses and scalp-specific Physician's Global Assessment (ss-PGA).

A. V. Marzano  
Department of Pathophysiology and Transplantation, Università Degli Studi Di Milano, 20122 Milan, Italy

M. Megna · L. Potestio  
Section of Dermatology, Department of Clinical Medicine and Surgery, University of Naples Federico II, Naples, Italy

D. Orsini · V. Lora  
UOC Clinical Dermatology, Dermatological Institute S. Galliciano, IRCCS, Rome, Italy

D. Orsini  
UniCamillus Saint Camillus International University of Health Sciences, Rome, Italy

L. Sacchelli · F. Bardazzi  
Dermatology Unit, IRCCS University Hospital of Bologna, Bologna, Italy

**Results:** At week 16, PASI 75, PASI 90, and PASI 100 were achieved by 49.6%, 29.7%, and 18.9% of patients, respectively, with response rates further improving to 84.9%, 60.6%, and 45.5% at week 32. Among patients with baseline scalp involvement ( $n=49$ ), 89.8% reached ss-PGA 0/1 at week 16 and 100% at week 32, showing rapid and sustained scalp clearance. Notably, baseline scalp involvement did not negatively affect overall skin response. Deucravacitinib demonstrated a favorable safety profile. Adverse events (AEs) were reported by 8.1% of patients and were all mild in severity. Treatment was discontinued in 2.7% of patients, and no severe AEs were observed.

**Conclusion:** Deucravacitinib demonstrated clinical effectiveness and a favorable safety profile in real-world practice, including excellent scalp clearance rates, confirming its therapeutic value even in patients with difficult-to-treat areas.

**Keywords:** Deucravacitinib; Psoriasis; Scalp psoriasis; TYK2 inhibitor

L. Sacchelli · F. Bardazzi  
Department of Medical and Surgical Sciences, Alma Mater Studiorum, University of Bologna, Bologna, Italy

S. R. Mercuri · G. Paolino  
Dermatology and Cosmetology Unit, IRCCS San Raffaele Hospital, Milan, Italy

E. Trovato  
Unit of Dermatology, Department of Medical, Surgical and Neurological Sciences, University of Siena, Siena, Italy

S. Giacalone  
Institute of Dermatology, ASST Valle Olona, Ospedale Sant'Antonio Abate, Gallarate, Italy

A. Pedron  
Dermatology Unit, Ospedale Carlo Poma, Mantua, Italy

M. Caproni  
Department of Health Sciences, Section of Dermatology, University of Florence, P. Palagi Hospital, Florence, Italy

E. Cammarata  
Unit of Dermatology, Maggiore Della Carità University Hospital, Novara, Italy

A. Cuccia  
Unit of Dermatology, San Donato Hospital, Arezzo, Italy

## Key Summary Points

### *Why carry out this study?*

Deucravacitinib is an oral TYK2 (tyrosine kinase 2) inhibitor approved for moderate-to-severe psoriasis. Real-world evidence on its effectiveness and safety remains limited, particularly in patients with difficult-to-treat areas such as scalp involvement.

Real-world multicenter studies are necessary to better characterize short-term clinical outcomes and site-specific responses in routine clinical practice.

### *What was learned from the study?*

Patients treated with deucravacitinib achieved promising short-term results after 16 weeks of follow-up, with further improvement observed after 32 weeks of treatment.

Deucravacitinib demonstrated rapid and sustained effectiveness on scalp psoriasis.

A. Altomare  
Clinical Dermatology, IRCCS Galeazzi Orthopaedic Institute, 20126 Milan, Italy

A. M. G. Brunasso  
Unit of Dermatology, Villa Scassi Hospital, ASL3 Genoa, Italy

V. Dini  
Department of Dermatology, University of Pisa, 56126 Pisa, Italy

S. Ribero  
Department of Biomedical Science and Human Oncology, Second Dermatologic Clinic, University of Turin, Turin, Italy

N. Zerbinati · A. Carugno  
Dermatology Unit, Ospedale Di Circolo E Fondazione Macchi, ASST Sette Laghi, Varese, Italy

N. Zerbinati  
Department of Medicine and Innovation Technology, University of Insubria, Varese, Italy

S. Caccavale  
Dermatology Unit, Department of Mental and Physical Health and Preventive Medicine, University of Campania Luigi Vanvitelli, Naples, Italy

A. Carugno  
Dermatology Unit, Department of Medicine and Surgery, University of Insubria, Varese, Italy

## INTRODUCTION

Psoriasis is a chronic, immune-mediated skin disease with an estimated global prevalence of 2–3%. It affects more than 125 million people worldwide and has shown a steady increase in incidence in recent decades [1]. Beyond its cutaneous manifestations, psoriasis is now widely recognized as a systemic inflammatory disorder [2]. The activation of the immune system contributes to the development of multiple comorbidities, in particular cardiometabolic conditions such as arterial hypertension, obesity, type 2 diabetes mellitus, dyslipidemia, and cardiovascular disease, which commonly coexist and adversely affect long-term outcomes [3]. Recent evidence has identified psoriasis as an independent cardiovascular risk factor. Patients with psoriasis exhibit an increased risk of major adverse cardiovascular events (MACE) compared with the general population, with cumulative risk closely linked to the severity of the disease and chronic inflammatory burden. These observations underscore the need for therapeutic strategies that can effectively manage the disease over an extended period, while maintaining long-term systemic safety [4]. In addition, psoriasis is associated with a substantial psychological and social burden, including reduced quality of life, increased prevalence of depression and anxiety, and marked socioeconomic impact related to stigma and chronic disease management [5, 6].

In this complex clinical context, patients with moderate-to-severe psoriasis frequently require long-term systemic treatment. However, according to European guidelines, conventional systemic agents remain the mandatory first-line systemic options for moderate-to-severe disease [7, 8]. Consequently, access to biologic agents or newer oral targeted therapies is generally restricted to patients with contraindications, inadequate response, or intolerance to conventional treatments [8]. This approach persists despite evidence showing that the use of innovative therapies is associated with greater efficacy and safety, including potential reductions in all-cause mortality and cardiovascular risk [9].

While the therapeutic landscape of biological agents for psoriasis has expanded considerably over the past decade, progress in the development of effective oral targeted therapies has been comparatively limited [10]. Deucravacitinib is a first-in-class, oral selective TYK2 (tyrosine kinase 2) inhibitor that exerts its activity through an allosteric mechanism, selectively modulating the interleukin (IL)-23, IL-12, and type I interferon signaling pathways [11]. Following the demonstration of robust efficacy and a favorable safety profile in phase 3 clinical trials (POETYK PSO-1 and POETYK PSO-2), deucravacitinib has been approved for the treatment of adult patients with moderate-to-severe psoriasis who are candidates for systemic therapy, including those with contraindications, intolerance, or inadequate response to conventional systemic treatments [12–14].

Although emerging real-world studies have started to confirm the effectiveness and safety of deucravacitinib outside the clinical trial setting, available evidence remains limited and heterogeneous, especially for difficult-to-treat areas such as scalp psoriasis, which is a common and clinically significant manifestation associated with substantial quality-of-life impairment [15, 16].

Robust multicenter real-world studies are needed to comprehensively assess the early effectiveness and safety of deucravacitinib across different patient populations and clinical settings, and to clarify its impact on difficult-to-treat areas such as scalp involvement. To address this unmet need, we conducted a retrospective multicenter study to evaluate the effectiveness, the impact on scalp involvement, and the safety profile of deucravacitinib in patients with moderate-to-severe psoriasis who received deucravacitinib for at least 16 weeks.

## METHODS

### Study Design and Population

We conducted a multicenter retrospective real-world study by collecting data from the electronic databases of 19 Italian Dermatology Units from October 2024 to November 2025.

We enrolled 111 adult patients ( $\geq 18$  years) with moderate-to-severe chronic plaque psoriasis treated with deucravacitinib for at least 16 weeks. Patients' eligibility for systemic treatment with deucravacitinib was assessed in accordance with the Italian adaptation of the EuroGuiDerm guideline on the systemic treatment of chronic plaque psoriasis [7]. Deucravacitinib was prescribed in accordance with the Summary of Product Characteristics [14].

## Data Collection

Demographic and clinical data were retrieved from electronic medical records, including sex, age, disease duration, body weight, body mass index (BMI), presence of cardiometabolic comorbidities, prior exposure to biological therapies, and baseline disease severity.

Psoriasis severity was assessed using the Psoriasis Area and Severity Index (PASI). The involvement of difficult-to-treat areas, including scalp, face, nails, genitalia, and palms/soles, was recorded at baseline [17]. In patients with scalp involvement, disease severity was additionally evaluated using the scalp-specific Physician's Global Assessment (ss-PGA).

As a result of the retrospective nature of the study, missing data could not be recovered or retrieved.

## Effectiveness Assessment

The effectiveness of deucravacitinib was evaluated at weeks 16 and 32 by calculating the proportion of patients achieving PASI 75 (defined as at least a 75% reduction in PASI score from baseline), PASI 90 (defined as at least a 90% reduction in PASI score from baseline), PASI 100 (complete skin clearance) and absolute PASI  $\leq 2$ , in accordance with current guideline-recommended treatment targets.

In patients presenting with the involvement of the scalp at baseline, scalp-specific effectiveness was evaluated using the ss-PGA. We assessed the mean change in ss-PGA score over time and the proportion of patients achieving a clinically

meaningful response, defined as ss-PGA of 0 or 1 (clear or almost clear) with a reduction of at least 2 points from baseline.

In addition, at week 16, we performed an exploratory comparative analysis of overall skin response according to baseline scalp involvement, comparing the proportions of patients achieving PASI 75, PASI 90, PASI 100, and absolute PASI  $\leq 2$  between those with and without scalp psoriasis at baseline.

## Safety Assessment

Safety was evaluated by reviewing all adverse events (AEs) reported during routine follow-up visits and recorded in the medical records. AEs were classified according to clinical severity, with particular attention to events leading to treatment discontinuation.

## Statistical Analysis

Continuous variables were reported as mean and standard deviation (SD), and categorical variables as absolute numbers and percentages.

Effectiveness outcomes at weeks 16 and 32 were analyzed descriptively. Comparisons of PASI 75, PASI 90, PASI 100, and PASI  $\leq 2$  response rates at week 16 between patients with and without baseline scalp involvement were performed using the chi-squared test or Fisher's exact test, as appropriate. A  $p$  value  $\leq 0.05$  was considered statistically significant. Given the exploratory nature of the subgroup analysis, no adjustment for multiple comparisons was applied.

All analyses were conducted on an as-observed basis using Stata/SE 18.0. Tables and figures were generated using Microsoft Excel and GraphPad Prism (version 10.2.3), respectively.

## Ethical Consideration

Institutional review board approval was exempted as the study protocol did not deviate from standard clinical practice. All patients received deucravacitinib as in good clinical practice, in accordance with Italian guidelines. All included patients

had provided written consent for a retrospective study of data collected during routine clinical practice (demographics, clinical scores). The study was performed in accordance with the Helsinki Declaration of 1964 and its later amendments. Data collection and handling complied with applicable laws, regulations, and guidance regarding patient protection, including patient privacy.

## RESULTS

### Baseline Characteristics

A total of 111 adult patients with moderate-to-severe chronic plaque psoriasis treated with deucravacitinib were included in the analysis. Baseline demographic and clinical characteristics of our patients are shown in Table 1.

The study population consisted predominantly of female patients (53.2%), with a mean ( $\pm$ SD) age of  $49.5 \pm 15.3$  years and a mean disease duration of  $15.2 \pm 14.7$  years. The mean BMI was  $25.3 \pm 4.2$  kg/m<sup>2</sup>. At baseline, 40.5% of patients presented at least one cardiometabolic comorbidity. Most patients were bio-naïve (79.3%), while 58.6% showed involvement of at least one difficult-to-treat area, including scalp/face, nails, palms/soles, or genitalia.

Scalp involvement at baseline was observed in 49 patients (44.1%). The mean baseline PASI was  $9.15 \pm 4.06$ , consistent with moderate-to-severe disease.

### Overall Effectiveness

Treatment effectiveness was evaluated at weeks 16 and 32 and is reported in Fig. 1.

At week 16, 49.6% of patients achieved PASI 75, while 29.7% and 18.9% achieved PASI 90 and PASI 100, respectively. Moreover, 54.1% of patients reached an absolute PASI  $\leq 2$  at the same time point.

Among patients who reached week 32 of follow-up ( $n=33$ ), response rates further improved, with 84.9% achieving PASI 75, 60.6% achieving PASI 90, and 45.5% reaching a complete skin clearance (PASI 100). An absolute PASI  $\leq 2$  was observed in 87.9% of patients at week 32,

**Table 1** Demographic characteristics of our population ( $N=111$ ) at baseline

Characteristic	Value
Female	59 (53.2)
Male	52 (46.8)
Difficult-to-treat areas	65 (58.6)
Bio-naïve	88 (79.3)
At least one cardiometabolic comorbidity	45 (40.5)
Scalp involvement	49 (44.1)
Age, years	$49.49 \pm 15.34$
Disease duration, years	$15.18 \pm 14.67$
BMI, kg/m <sup>2</sup>	$25.26 \pm 4.21$
PASI at baseline	$9.15 \pm 4.06$

Data are reported as  $n$  (%) or mean  $\pm$  SD

BMI body mass index, PASI Psoriasis Area and Severity Index, SD standard deviation

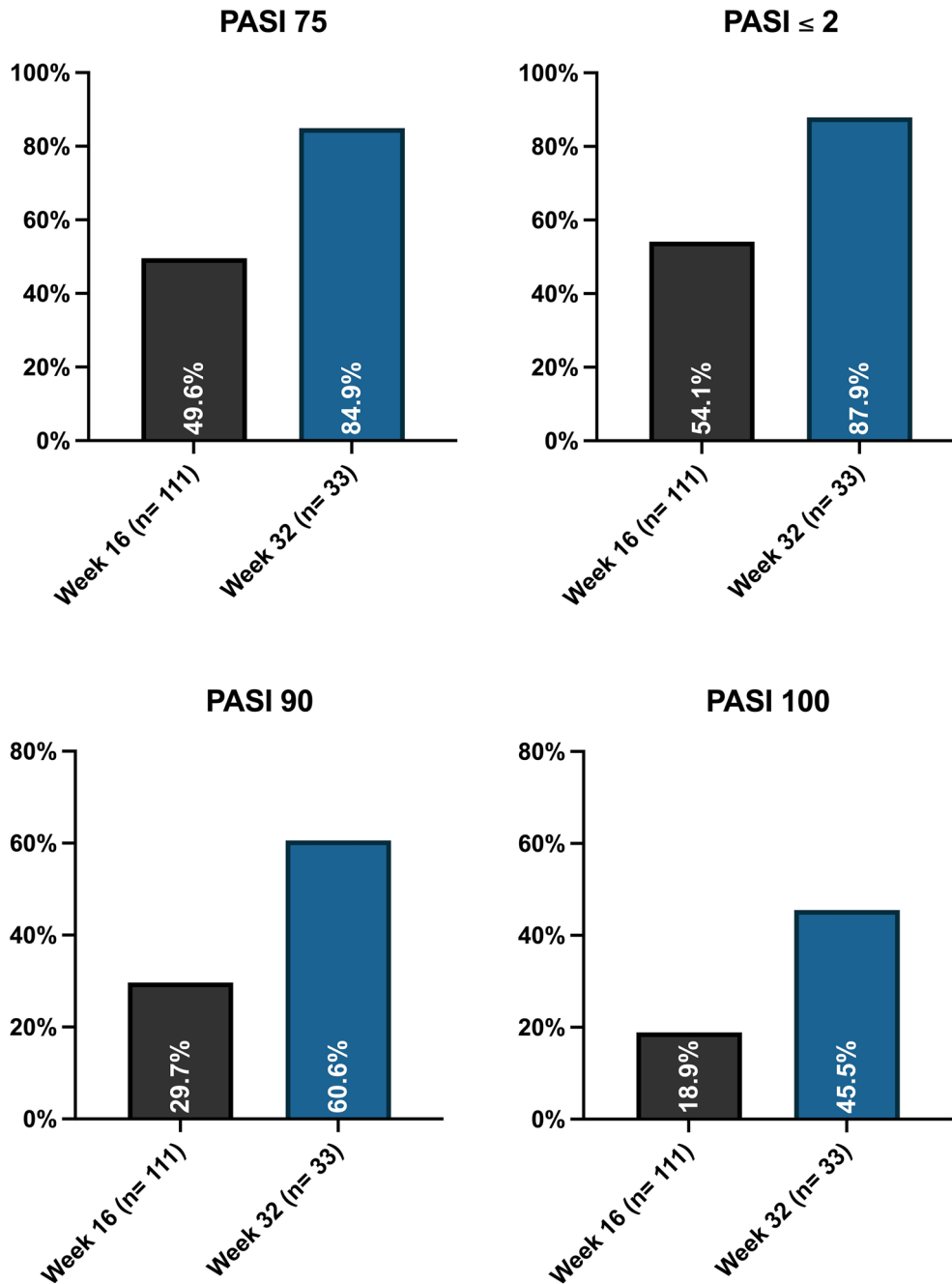
indicating sustained and progressive clinical improvement over time.

### Scalp Psoriasis Outcomes

Among patients presenting with scalp involvement at baseline ( $n=49$ ), scalp-specific effectiveness was evaluated using the ss-PGA (Fig. 2).

In this cohort of patients, the mean ss-PGA scores decreased from  $2.73 \pm 0.78$  at baseline to  $0.67 \pm 0.77$  at week 16, and further to  $0.11 \pm 0.32$  at week 32, indicating a rapid and sustained improvement in scalp disease severity. At week 16, 89.8% of patients with baseline scalp involvement achieved a clinically meaningful scalp response, defined as ss-PGA 0 or 1. Interestingly, all patients (100%) with available follow-up at week 32 achieved the same endpoint.

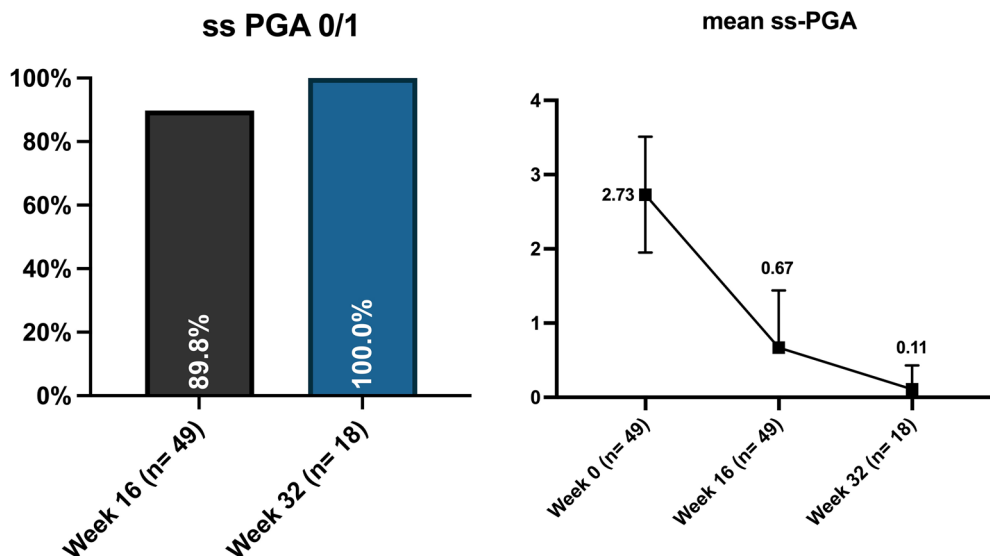
In order to evaluate whether baseline scalp involvement influenced overall skin clearance, an exploratory analysis was performed comparing PASI outcomes at week 16 between patients with and without scalp involvement (Fig. 3). In particular, patients with baseline scalp involvement showed numerically higher response rates compared with those without scalp



**Fig. 1** Effectiveness of deucravacitinib in terms of PASI 75, PASI 90, PASI 100, and absolute PASI ≤ 2 at weeks 16 and 32. *PASI* Psoriasis Area and Severity Index

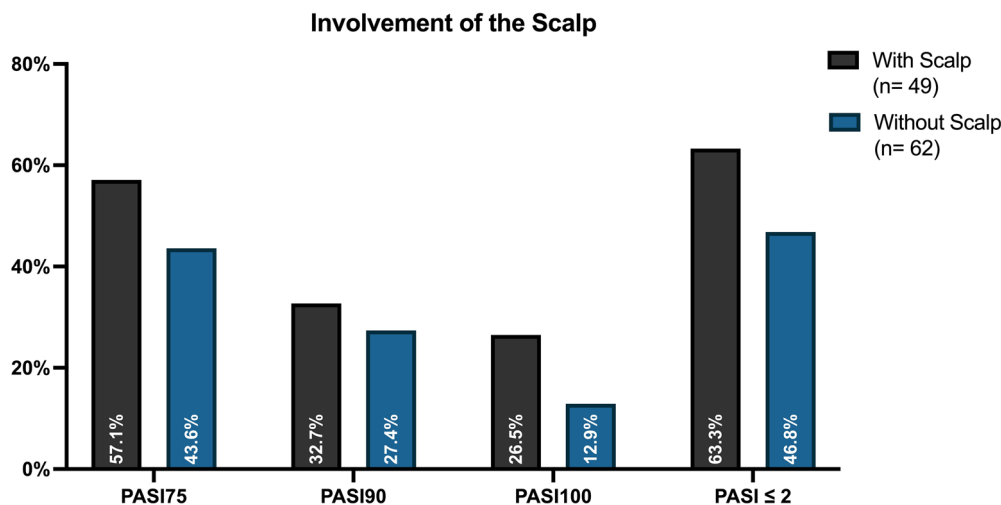
involvement, with PASI 75 achieved by 57.1% versus 43.6% ( $p=0.155$ ), PASI 90 by 32.7% versus 27.4% ( $p=0.549$ ), PASI 100 by 26.5% versus 12.9% ( $p=0.069$ ), and absolute PASI ≤ 2 by 63.3% versus 46.8% ( $p=0.083$ ), respectively.

Although these differences did not reach statistical significance (all  $p>0.05$ ), the observed trend suggests that baseline scalp involvement did not negatively impact early global skin response to deucravacitinib and may even



**Fig. 2** Scalp-specific outcomes in patients with baseline scalp involvement ( $n = 49$ ). Left panel: Proportion of patients achieving scalp-specific ss-PGA score of 0 or 1 (clear or almost clear) at weeks 16 and 32. Right panel:

Mean ss-PGA scores over time showing progressive improvement from baseline to week 32. Error bars represent standard deviation. *ss-PGA* scalp-specific Physician’s Global Assessment



**Fig. 3** Effectiveness of deucravacitinib at week 16 stratified by baseline scalp involvement. Proportion of patients achieving PASI 75, PASI 90, PASI 100, and absolute PASI ≤ 2 in patients with baseline scalp involvement versus

those without scalp involvement. No statistically significant differences were observed between groups (all  $p > 0.05$ , chi-squared test). *PASI* Psoriasis Area and Severity Index

be associated with a numerically more favorable overall clinical response in this real-world cohort.

**Safety**

In terms of safety, 9 patients (8.1%) experienced at least one AE during follow-up (Table 2). The most commonly reported AEs were mouth ulcers

(3 patients), followed by upper respiratory tract infections (URTIs) (2 patients), and acne (2 patients). No severe AEs were reported. Treatment discontinuation due to AEs occurred in 3 patients (2.7%), due to mouth ulcers (2 patients) and refractory candidiasis (1 patient) (Table 2).

## DISCUSSION

In this multicenter, real-world study, deucravacitinib demonstrated short-term effectiveness and a favorable safety profile in patients with moderate-to-severe plaque psoriasis. Furthermore, high response rates were observed in patients with scalp involvement, confirming the effectiveness of the TYK2 inhibitor also in this difficult-to-treat area.

Deucravacitinib received European Medicines Agency (EMA) approval in March 2023 for the treatment of moderate-to-severe plaque psoriasis, following the results of the phase 3 POETYK PSO-1 and POETYK PSO-2 clinical trials. These phase 3 clinical randomized trials evaluated the efficacy and safety of deucravacitinib administered 6 mg once daily compared with placebo and apremilast administered 30 mg twice daily [12, 13].

In particular, in the POETYK PSO-1 clinical trial, after 16 weeks of treatment with deucravacitinib, 58.4% and 35.5% of patients achieved

PASI 75 and PASI 90 responses, respectively. These rates are maintained and increased at 24 weeks of follow-up, with 69.3% of patients reaching PASI 75 and 42.2% of them reaching PASI 90 [13]. Similarly, in the POETYK PSO-2 trial 53% and 58.7% of patients achieved PASI 75 at weeks 16 and 24, respectively, while PASI 90 responses were observed in 27% and 32.5% of patients at the same time points [12]. At week 16, our real-world data showed response rates comparable to the trial results, with PASI 75 and PASI 90 achieved in 49.6% and 29.7% of patients, respectively. Encouragingly, at week 32, these rates had improved considerably to 84.9% and 60.6%, surpassing even the week 24 outcomes from the pivotal phase 3 studies. This is probably due to the small number of patients who reached 32 weeks of follow-up in our study.

Regarding difficult-to-treat areas, particularly the scalp, in the POETYK PSO-1, 70.3% and 72.2% of patients with baseline scalp involvement achieved an ss-PGA score of 0 or 1 after only 16 and 24 weeks of treatment, respectively [13]. Additionally, the subgroup analysis conducted by Imafuku et al. from the POETYK PSO-4 trial found that 81% and 85.7% of patients with baseline ss-PGA  $\geq 3$  achieved an ss-PGA score of 0 or 1 at weeks 16 and 24, respectively [18]. In our real-world cohort, comparable and numerically higher response rates were observed, with 89.8% of patients achieving ss-PGA 0/1 at week 16 and 100% after 32 weeks of follow-up, supporting the effectiveness of deucravacitinib on scalp involvement in clinical practice. These high rates of scalp clearance are consistent with the robust effectiveness previously reported for biological agents targeting the IL-17 and IL-23 pathways in patients with scalp psoriasis. Anti-IL-17 and anti-IL-23 biologics have demonstrated rapid and sustained efficacy in this difficult-to-treat area, with high proportions of patients achieving scalp-specific clearance or near-clearance in both randomized controlled trials and real-world studies [19–23].

Real-world evidence on deucravacitinib is progressively emerging. Hagino et al. reported real-world effectiveness and safety data up to 52 weeks, showing PASI 75, PASI 90, PASI 100, and ss-PGA response rates at weeks 16 and 24

**Table 2** Safety profile of deucravacitinib throughout the study period

AE	N (%)
Total	9 (8.1)
Mouth ulcers	3 (2.7)
URTIs	2 (1.8)
Acne	2 (1.8)
Hypertransaminasemia	1 (0.9)
Candida infection	1 (0.9)
Severe AEs	0
AEs leading to discontinuation	3 (2.7)

AE adverse event, URTI upper respiratory tract infection

that were broadly comparable to those observed in our cohort, despite differences in study design and patient characteristics [15, 16].

Similarly, Zhang et al. described real-world outcomes at week 16, reporting PASI 75, PASI 90, and PASI 100 response rates of 64.1%, 38.5%, and 15.4%, respectively. While PASI 75 rates in that cohort were slightly higher than those observed in our study at the same time point, PASI 90 and PASI 100 responses were comparable, further supporting the consistency of deucravacitinib effectiveness across different real-world populations [24].

In terms of safety, long-term data from the open-label extension of the POETYK PSO-1 and POETYK PSO-2 phase 3 trials have provided reassuring evidence on the tolerability of continuous deucravacitinib treatment. Over a follow-up period of up to 3 years, the most frequently reported adverse events were nasopharyngitis, COVID-19 infection, and URTIs, while the incidence of MACE and malignancies remained consistently low. Importantly, cumulative incidence rates of these events were stable or decreased when comparing the first and third years of exposure, supporting a favorable long-term safety profile [25].

These findings have been further confirmed by a recent expert consensus panel, which, after a review of clinical trial data, concluded that deucravacitinib displays a differentiated safety profile compared with traditional Janus kinase (JAK) inhibitors. In particular, no consistent signal of clinically relevant laboratory abnormalities emerged, and routine baseline or ongoing laboratory monitoring was not considered necessary in patients receiving deucravacitinib [26].

Instead, real-world pharmacovigilance data derived from the US Food and Drug Administration (FDA) Adverse Event Reporting System (FAERS) have described acne, mouth ulceration, and folliculitis as the most frequently reported label-listed AEs [27, 28].

In our study, deucravacitinib demonstrated a consistent tolerability profile, with AEs generally mild and manageable and no unexpected safety signals emerging during short-term follow-up. These observations are consistent with previously published real-world studies [15, 16].

Our real-world experience has different limitations. First, the retrospective design is inherently subject to potential selection and information biases. Second, as a result of the real-world nature of the study, missing data could not be retrieved, and follow-up duration was heterogeneous, with a relatively small proportion of patients reaching week 32. Third, the sample size was limited, particularly for subgroup analyses, including scalp-specific outcomes and comparisons between patients with and without baseline scalp involvement. Finally, clinical assessments were performed by multiple investigators across different centers, which may have introduced some degree of inter-observer variability.

## CONCLUSIONS

This multicenter real-world study provides further evidence supporting the short-term effectiveness and safety profile of deucravacitinib in patients with moderate-to-severe psoriasis. In our study, deucravacitinib demonstrated marked effectiveness also in patients with scalp involvement, a difficult-to-treat area associated with substantial disease burden, without negatively impacting overall skin response.

Taken together, these findings support deucravacitinib as an effective and well-tolerated oral therapeutic option for patients with moderate-to-severe psoriasis, including those with challenging site involvement. Furthermore, the response rates observed in our cohort, characterized by a mean baseline PASI of 9.15, underscore the therapeutic value of deucravacitinib even in patients with moderate psoriasis, supporting its role across the full spectrum of disease severity. Larger prospective studies with longer follow-up are needed to confirm these findings, to better define predictors of response in real-world settings, and to comprehensively evaluate the impact of deucravacitinib on other difficult-to-treat areas.

## ACKNOWLEDGEMENTS

We thank the participants of the study. This work was partially supported by “Ricerca Corrente” funding from Italian Ministry of Health to IRCCS Humanitas Research Hospital.

**Author Contribution.** All authors contributed to the conception and design of the study. Material preparation and data analysis were conducted by Luciano Ibba, Mario Valenti, Sara Di Giulio and Alessandra Narcisi. Data collection was performed by Piergiorgio Malagoli, Anna Balato, Angelo V. Marzano, Matteo Megna, Diego Orsini, Lidia Sacchelli, Federico Bardazzi, Santo R. Mercuri, Emanuele Trovato, Serena Giacalone, Alexia Pedron, Marzia Caproni, Edoardo Cammarata, Aldo Cuccia, Andrea Altomare, Alexandra M. G. Brunasso, Valentina Dini, Simone Ribero, Nicola Zerbinati, Francesco Messina; Stefano Caccavale; Carlo G. Carrera, Luca Potestio, Viviana Lora, Andrea Carugno and Giovanni Paolino. Luciano Ibba and Sara Di Giulio wrote the first draft of the manuscript, and all authors commented on previous versions of the manuscript. Alessandra Narcisi and Mario Valenti performed the review and the editing of the final draft of the manuscript. Alessandra Narcisi and Antonio Costanzo supervised the study. All authors read and approved the final manuscript.

**Funding.** No funding or sponsorship was received for this study or publication of this article.

**Data Availability.** The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

### Declarations

**Conflict of Interest.** Mario Valenti has been a consultant and/or speaker for Sanofi, Leo Pharma, Eli Lilly, Novartis, Janssen, AbbVie, Boehringer Ingelheim, Almirall, UCB and Difa Cooper. Luciano Ibba has been a consultant and/or speaker and has served as an advisory board

member for Almirall and LEO Pharma. Piergiorgio Malagoli has been a speaker for AbbVie, Eli Lilly, Novartis, Janssen-Cilag, Celgene, Leo Pharma, and Almirall. Anna Balato has received honoraria for participation in advisory boards, meetings, or as a speaker for AbbVie, Celgene, Janssen-Cilag, Eli Lilly, Novartis Pharma, Pfizer, Sanofi-Genzyme, and UCB Pharma. Angelo V. Marzano reports consultancy/advisory boards disease-relevant honoraria from AbbVie, Amgen, Boehringer Ingelheim, Bristol Myers Squibb, Incyte, Leopharma, Novartis, Pfizer, Sanofi, and UCB. Matteo Megna acted as a speaker or consultant for AbbVie, Eli Lilly, Janssen, Leo Pharma, and Novartis. Diego Orsini has been a speaker and/or consultant for AbbVie, Leo Pharma, UCB, Bristol-Myers Squibb, and Boehringer Ingelheim. Emanuele Trovato is involved in an intermittent project focused on consulting and/or advisory relationships and/or travel-congress support with Eli Lilly, Novartis, Janssen-Cilag, AbbVie, and Almirall. Serena Giacalone has received honoraria from AbbVie, Johnson and Johnson, Almirall, Sanofi, Leo Pharma, and Novartis. Simone Ribero has served as an advisory board member and/or consultant and has received fees and speaker's honoraria or has participated in clinical studies for AbbVie, Almirall, Leo Pharma, Eli Lilly, Novartis, Pfizer, and Sanofi Genzyme. Andrea Carugno has been a consultant and/or speaker for AbbVie, Leo Pharma, Eli Lilly, Novartis, Janssen-Cilag, Amgen, Almirall, UCB Pharma, and Boehringer Ingelheim. Giovanni Paolino received speaker's honoraria from AbbVie, Janssen, UCB and Pierre Fabre Pharma. Antonio Costanzo has served as an advisory board member, consultant, and has received fees and speaker's honoraria or has participated in clinical trials for AbbVie, Almirall, Biogen, Leo Pharma, Eli Lilly, Janssen, Novartis, Pfizer, Sanofi Genzyme, and UCB Pharma. Alessandra Narcisi has served on advisory boards, received honoraria for lectures, and research grants from Almirall, AbbVie, Leo Pharma, Celgene, Eli Lilly, Janssen, Novartis, Sanofi Genzyme, Amgen, and Boehringer Ingelheim. Carlo G. Carrera has served as a board participant or speaker for AbbVie, Eli Lilly, Janssen, Novartis, Celgene, Almirall, and Leo Pharma. Sara Di Giulio, Lidia Sacchelli, Santo R. Mercuri, Alexia

Pedron, Marzia Caproni, Edoardo Cammarata, Aldo Cuccia, Andrea Altomare, Alexandra M. G. Brunasso, Valentina Dini, Nicola Zerbinati, Francesco Messina, Stefano Caccavale, Luca Potestio, Federico Bardazzi and Viviana Lora have nothing to declare.

**Ethical Approval.** Institutional review board approval was exempted as the study protocol did not deviate from standard clinical practice. All patients received deucravacitinib as in good clinical practice, in accordance with Italian guidelines. All included patients had provided written consent for a retrospective study of data collected during routine clinical practice (demographics, clinical scores). The study was performed in accordance with the Helsinki Declaration of 1964 and its later amendments. Data collection and handling complied with applicable laws, regulations, and guidance regarding patient protection, including patient privacy.

**Open Access.** This article is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License, which permits any non-commercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc/4.0/>.

## REFERENCES

1. Greb JE, Goldminz AM, Elder JT, et al. Psoriasis. *Nat Rev Dis Primers*. 2016;2:16082. <https://doi.org/10.1038/nrdp.2016.82>.
2. Puig L. Cardiometabolic comorbidities in psoriasis and psoriatic arthritis. *Int J Mol Sci*. 2017;19(1):58. <https://doi.org/10.3390/ijms19010058>.
3. Ibba L, Di Giulio S, Gargiulo L, et al. Long-term effectiveness and safety of risankizumab in patients with moderate-to-severe psoriasis with and without cardiometabolic comorbidities: a single-center retrospective study. *J Dermatolog Treat*. 2024;35(1):2425029. <https://doi.org/10.1080/09546634.2024.2425029>.
4. Ponikowska M, Hill L, Lee CS, et al. Cardiovascular disease and psoriasis. *Dermatol Ther*. 2025. <https://doi.org/10.1007/s13555-025-01566-0>.
5. Taliercio M, Lebwohl M. Psoriasis comorbidities and their treatment impact. *Dermatol Clin*. 2024;42(3):405–16. <https://doi.org/10.1016/j.det.2024.02.007>.
6. Yamazaki F. Psoriasis: comorbidities. *J Dermatol*. 2021;48(6):732–40. <https://doi.org/10.1111/1346-8138.15840>.
7. Gisondi P, Fargnoli MC, Amerio P, et al. Italian adaptation of EuroGuiDerm guideline on the systemic treatment of chronic plaque psoriasis. *Ital J Dermatol Venereol*. 2022;157(Suppl. 1 to No. 1):1–78. <https://doi.org/10.23736/S2784-8671.21.07132-2>.
8. Nast A, Smith C, Spuls PI, et al. EuroGuiDerm guideline on the systemic treatment of Psoriasis vulgaris - Part 1: treatment and monitoring recommendations. *J Eur Acad Dermatol Venereol*. 2020;34(11):2461–98. <https://doi.org/10.1111/jdv.16915>.
9. Kridin K, Bieber K, Vorobyev A, et al. Biological, as opposed to classic antipsoriatic drug or apremilast, treatment mitigates the risk of death and cardiovascular disease in psoriasis. *EBioMedicine*. 2025;111:105485. <https://doi.org/10.1016/j.ebiom.2024.105485>.
10. Balak DMW, Gerdes S, Parodi A, Salgado-Boquete L. Long-term safety of oral systemic therapies for psoriasis: a comprehensive review of the literature. *Dermatol Ther*. 2020;10(4):589–613. <https://doi.org/10.1007/s13555-020-00409-4>.
11. Kingston P, Blauvelt A, Strober B, Armstrong AW. Deucravacitinib: a novel TYK2 inhibitor for the treatment of moderate-to-severe psoriasis. *J Psoriasis Psoriatic Arthritis*. 2023;8(4):156–65. <https://doi.org/10.1177/24755303231201336>.
12. Strober B, Thaçi D, Sofen H, et al. Deucravacitinib versus placebo and apremilast in moderate to severe plaque psoriasis: efficacy and safety results from the 52-week, randomized, double-blinded, phase 3

- Program fOR Evaluation of TYK2 inhibitor psoriasis second trial. *J Am Acad Dermatol*. 2023;88(1):40–51. <https://doi.org/10.1016/j.jaad.2022.08.061>.
13. Armstrong AW, Gooderham M, Warren RB, et al. Deucravacitinib versus placebo and apremilast in moderate to severe plaque psoriasis: efficacy and safety results from the 52-week, randomized, double-blinded, placebo-controlled phase 3 POETYK PSO-1 trial. *J Am Acad Dermatol*. 2023;88(1):29–39. <https://doi.org/10.1016/j.jaad.2022.07.002>.
  14. Sotyktu. European Medicines Agency (EMA). Jan 24, 2023. <https://www.ema.europa.eu/en/medicines/human/EPAR/sotyktu>. Accessed Dec 7, 2025.
  15. Hagino T, Saeki H, Fujimoto E, Kanda N. Effectiveness and safety of deucravacitinib treatment for moderate-to-severe psoriasis in real-world clinical practice in Japan. *J Dermatolog Treat*. 2024;35(1):2307489. <https://doi.org/10.1080/09546634.2024.2307489>.
  16. Hagino T, Onda M, Saeki H, Fujimoto E, Kanda N. Effectiveness of deucravacitinib for genital, nail and scalp lesions in patients with psoriasis: a 24-week real-world study. *Clin Exp Dermatol*. 2024;50(1):130–3. <https://doi.org/10.1093/ced/llae312>.
  17. Ibba L, Gargiulo L, Alfano A, et al. Anti-IL-23 and anti-IL-17 drugs for the treatment of non-pustular palmoplantar psoriasis: a real-life retrospective study. *J Dermatolog Treat*. 2023;34(1):2199108. <https://doi.org/10.1080/09546634.2023.2199108>.
  18. Imafuku S, Okubo Y, Tada Y, et al. Deucravacitinib, an oral, selective, allosteric tyrosine kinase 2 inhibitor, in Japanese patients with moderate to severe plaque, erythrodermic, or generalized pustular psoriasis: efficacy and safety results from an open-label, phase 3 trial. *J Dermatol*. 2024;51(3):365–79. <https://doi.org/10.1111/1346-8138.17074>.
  19. Egeberg A, Hawkes JE, Somani N, et al. Sustained improvements in clinical and patient-reported outcomes and quality of life through 5 years among ixekizumab-treated patients with complete clearance of scalp psoriasis by week 60. *Dermatol Ther*. 2024;14(4):1007–18. <https://doi.org/10.1007/s13555-024-01147-7>.
  20. Valenti M, Gargiulo L, Ibba L, et al. Effectiveness of ixekizumab for the treatment of moderate-to-severe plaque psoriasis with involvement of difficult-to-treat areas: a 52-week multicenter retrospective study. *J Dermatol*. 2024;51(6):839–43. <https://doi.org/10.1111/1346-8138.17115>.
  21. Gargiulo L, Ibba L, Malagoli P, et al. Effectiveness, tolerability, and drug survival of risankizumab in a real-world setting: a three-year retrospective multicenter study-IL PSO (ITALIAN LANDSCAPE PSORIASIS). *J Clin Med*. 2024;13(2):495. <https://doi.org/10.3390/jcm13020495>.
  22. Sonkoly E, Maul JT, Megna M, et al. Guselkumab in patients with scalp psoriasis: a post hoc analysis of the VOYAGE 2 phase III randomized clinical trial. *Acta Derm Venereol*. 2024;104:adv18672. <https://doi.org/10.2340/actadv.v104.18672>.
  23. Reich K, Leonardi C, Lebwohl M, et al. Sustained response with ixekizumab treatment of moderate-to-severe psoriasis with scalp involvement: results from three phase 3 trials (UNCOVER-1, UNCOVER-2, UNCOVER-3). *J Dermatolog Treat*. 2017;28(4):282–7. <https://doi.org/10.1080/09546634.2016.1249820>.
  24. Zhang Y, Chen T, Pan W, Li Z. A real world study on the effectiveness and safety of deucravacitinib in the treatment of moderate-to-severe plaque psoriasis in China. *J Zhejiang Univ (Med Sci)*. 2025;54(5):653–60. <https://doi.org/10.3724/zdxbyxb-2025-0432>.
  25. Armstrong AW, Lebwohl M, Warren RB, et al. Safety and efficacy of deucravacitinib in moderate to severe plaque psoriasis for up to 3 years: an open-label extension of randomized clinical trials. *JAMA Dermatol*. 2025;161(1):56–66. <https://doi.org/10.1001/jamadermatol.2024.4688>.
  26. Shah M, Burshtein J, Zakria D, et al. A review of the safety and efficacy of deucravacitinib for plaque psoriasis: an expert consensus panel. *J Drugs Dermatol*. 2025;24(2):147–55. <https://doi.org/10.36849/JDD.8616>.
  27. Zhao K, Xiao S, Zhao Y, Tu C. Real-world safety of deucravacitinib: insights from the Food and Drug Administration Adverse Event Reporting System. *Int J Clin Pharm*. 2025;47(5):1215–23. <https://doi.org/10.1007/s11096-025-01896-1>.
  28. Tan H, Chen X, Ou X, Chen Y. Safety evaluation of deucravacitinib: a real-world analysis based on the FDA adverse event reporting system database. *Int J Clin Pharm*. 2025;47(6):1821–9. <https://doi.org/10.1007/s11096-025-01980-6>.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.