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Effects of Ruxolitinib Cream on Work Productivity and Activity Impairment in Patients With Atopic Dermatitis: Pooled Results From Two Phase 3 Studies

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Background

- Atopic dermatitis (AD) is a chronic inflammatory skin disease associated with marked pruritus, frequent flares, depression, anxiety, and sleep deprivation that can negatively impact work productivity and daily activities[1-3]; significant impairment in these domains has been observed in people with vs without AD[3]
- Janus kinases (JAKs) act downstream of proinflammatory cytokines and itch mediators involved in the pathogenesis of AD[4,5]
- Ruxolitinib cream is a topical selective inhibitor of JAK1 and JAK2 in development for the treatment of AD[6]
- In two phase 3 AD studies of identical design (TRuE-AD1 [NCT03745638] and TRuE-AD2 [NCT03745651]), ruxolitinib cream demonstrated anti-inflammatory activity with rapid and sustained antipruritic action vs vehicle and was well tolerated[7]

Objective

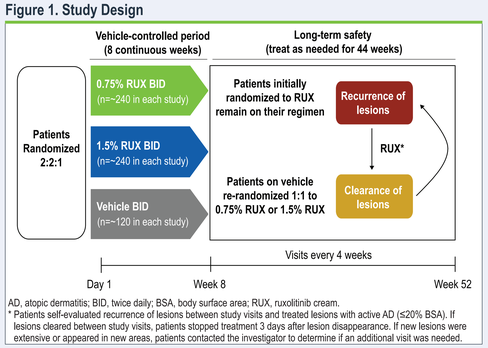
- To describe the efficacy of ruxolitinib cream related to work productivity and activity impairment using pooled data from two phase 3 trials in adolescent and adult patients with AD

Methods

Study Design and Patients

- Eligible patients were aged ≥12 years with AD for ≥2 years and had an Investigator's Global Assessment (IGA) score of 2 or 3 and 3%–20% affected body surface area (excluding scalp)
- Key exclusion criteria were unstable course of AD, other types of eczema, immunocompromised status, use of AD systemic therapies during the washout period and during the study, use of AD topical therapies (except bland emollients) during the washout period and during the study, and any serious illness or medical condition that could interfere with study conduct, interpretation of data, or patients' well-being
- TRuE-AD1 and TRuE-AD2 had identical study designs (**Figure 1**)
  - In both studies, patients were randomized (2:2:1) to 1 of 2 ruxolitinib cream strength regimens (0.75% twice daily [BID] or 1.5% BID) or vehicle cream BID for 8 weeks of double-blind treatment
  - Patients on ruxolitinib cream subsequently continued treatment for 44 weeks; patients initially randomized to vehicle were re-randomized 1:1 (blinded) to either ruxolitinib cream regimen

Figure 1. Study Design



AD, atopic dermatitis; BID, twice daily; BSA, body surface area; RUX, ruxolitinib cream.
* Patients self-evaluated recurrence of lesions between study visits and treated lesions with active AD (≤20% BSA). If lesions cleared between study visits, patients stopped treatment 3 days after lesion disappearance. If new lesions were extensive or appeared in new areas, patients contacted the investigator to determine if an additional visit was needed.

Assessments

- Patient-reported outcomes were assessed using the Work Productivity and Activity Impairment Questionnaire–Specific Health Problem, version 2.0 (WPAI:SHP v2.0) for all employed patients at Weeks 2, 4, and 8
  - WPAI:SHP v2.0 is a 6-item questionnaire that measures the effect of overall health and specific symptoms on productivity at work and regular activity outside of work during the past 7 days, including work time missed owing to AD (absenteeism), impairment while working with AD (presenteeism), overall AD-related work impairment (absenteeism and presenteeism), and AD-related activity impairment; scores are expressed as a percentage of impairment, with higher scores indicating more impairment[8]
    - Although not reported in patients with AD, studies in patients with psoriasis[9] and psoriatic arthritis[10] suggest that a 15%–20% improvement in each WPAI domain is clinically meaningful
- Change from baseline in Dermatology Life Quality Index (DLQI) subscale score was also assessed at Weeks 2, 4, and 8 for daily activities (question 3 [shopping]), leisure (questions 5 [social] and 6 [sports]), and work (question 7)
  - The DLQI is a 10-item questionnaire used to assess various aspects of quality of life, including work productivity and daily activities, in a variety of dermatologic conditions[11]

Statistical Analyses

- All analyses were conducted using the pooled data from both studies
- The efficacy population consisted of 1208 patients (vehicle, n=244; 0.75% ruxolitinib cream, n=483; 1.5% ruxolitinib cream, n=481)
- Statistical significance was assessed using analysis of covariance

Results

Patients

- A total of 1249 patients (median age, 32 years) were randomized
- Distribution of baseline demographics and clinical characteristics was similar across treatment groups (**Table 1**)

Table 1. Patient Demographics and Baseline Clinical Characteristics

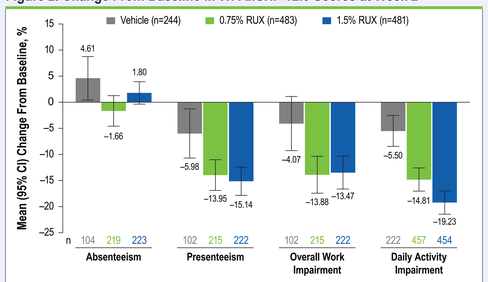
Characteristic	Vehicle (n=250)	0.75% RUX (n=500)	1.5% RUX (n=499)	Total (N=1249)
Age, median (range), y	34.0 (12–82)	33.0 (12–85)	31.0 (12–85)	32.0 (12–85)
Female, n (%)	159 (63.6)	304 (60.8)	308 (61.7)	771 (61.7)
Race, n (%)				
White	170 (68.0)	345 (69.0)	355 (71.1)	870 (69.7)
Black	61 (24.4)	118 (23.6)	113 (22.6)	292 (23.4)
Asian	10 (4.0)	16 (3.2)	20 (4.0)	46 (3.7)
Other	9 (3.6)	21 (4.2)	11 (2.2)	41 (3.3)
Region, n (%)				
North America	172 (68.8)	342 (68.4)	341 (68.3)	855 (68.5)
Europe	78 (31.2)	158 (31.6)	158 (31.7)	394 (31.5)
BSA, mean (SD), %	9.6 (5.5)	10.0 (5.3)	9.6 (5.3)	9.8 (5.4)
EASI, mean (SD)	7.8 (4.8)	8.1 (4.9)	7.8 (4.8)	8.0 (4.8)
IGA, n (%)				
2	64 (25.6)	125 (25.0)	123 (24.6)	312 (25.0)
3	186 (74.4)	375 (75.0)	376 (75.4)	937 (75.0)
Itch NRS score, mean (SD)	5.1 (2.4)	5.2 (2.4)	5.1 (2.5)	5.1 (2.4)
≥4, n (%)	159 (63.6)	324 (64.8)	315 (63.1)	798 (63.9)
DLQI score, mean (SD)*	9.4 (6.4)	9.9 (6.5)	9.5 (6.5)	NA
Duration of disease, median (range), y	16.5 (0.8–79.1)	15.1 (0.1–68.8)	16.1 (0–69.2)	15.8 (0–79.1)
Facial involvement, n (%)†	93 (37.2)	195 (39.0)	197 (39.5)	485 (38.8)
Number of flares in last 12 mo, mean (SD)†	7.3 (25.7)	5.2 (6.7)	6.0 (17.6)	5.9 (16.5)

BSA, body surface area; DLQI, Dermatology Life Quality Index; EASI, Eczema Area and Severity Index; IGA, Investigator's Global Assessment; NA, not available; NRS, numerical rating scale; RUX, ruxolitinib cream.
* Data from the efficacy-evaluable population.
† Patient reported.

Patient-Reported Outcomes

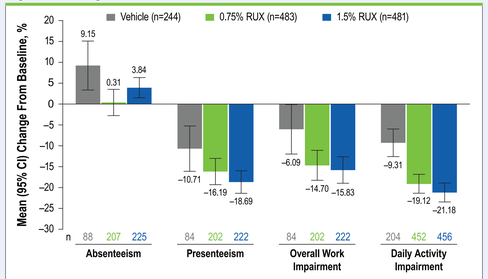
- Improvements in WPAI:SHP scores related to absenteeism, presenteeism, overall work impairment, and daily activity impairment were observed at Week 2 (**Figure 2**) and Week 4 (**Figure 3**) for patients who applied either strength of ruxolitinib cream vs vehicle, with a significantly greater change from baseline with 1 or both strengths of ruxolitinib cream vs vehicle in all domains at Week 8 (**Figure 4**)

Figure 2. Change From Baseline in WPAI:SHP v2.0 Scores at Week 2



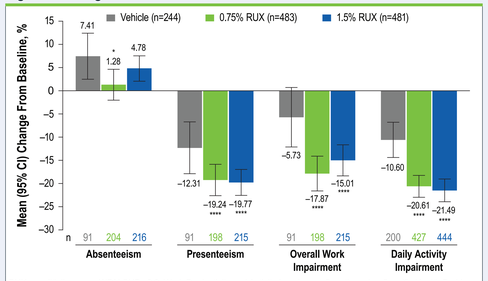
RUX, ruxolitinib cream; WPAI:SHP v2.0, Work Productivity and Activity Impairment Questionnaire–Specific Health Problem, version 2.0.

Figure 3. Change From Baseline in WPAI:SHP v2.0 Scores at Week 4



RUX, ruxolitinib cream; WPAI:SHP v2.0, Work Productivity and Activity Impairment Questionnaire–Specific Health Problem, version 2.0.

Figure 4. Change From Baseline in WPAI:SHP v2.0 Scores at Week 8



RUX, ruxolitinib cream; WPAI:SHP v2.0, Work Productivity and Activity Impairment Questionnaire–Specific Health Problem, version 2.0.
* $P<0.05$ vs vehicle; **** $P<0.0001$ vs vehicle.

- Mean (SD) WPAI:SHP scores for each domain at each time point across treatment groups are shown in **Table 2**

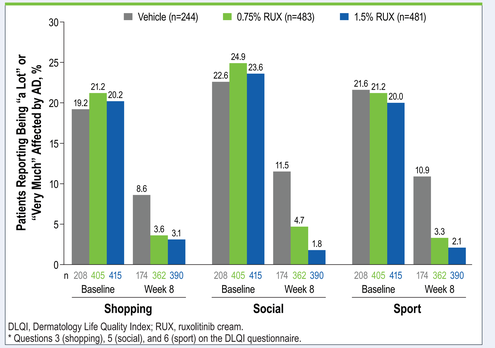
Table 2. WPAI:SHP v2.0 Scores at Baseline and Weeks 2, 4, and 8

WPAI:SHP v2.0 Score, mean (SD), %	Vehicle (n=244)	0.75% RUX (n=483)	1.5% RUX (n=481)
Absenteeism			
Baseline	5.2 (15.4)	7.9 (20.5)	3.9 (13.4)
Week 2	9.0 (21.3)	6.0 (17.6)	4.5 (14.8)
Week 4	13.2 (25.9)	7.7 (19.8)	6.9 (18.5)
Week 8	12.7 (21.3)	7.7 (21.5)	7.5 (19.1)
Presenteeism			
Baseline	33.9 (27.4)	30.1 (25.6)	29.8 (24.1)
Week 2	28.0 (25.7)	14.6 (18.6)	14.7 (19.9)
Week 4	23.2 (26.0)	11.9 (17.0)	10.1 (17.1)
Week 8	22.0 (24.3)	10.1 (17.3)	9.5 (17.1)
Overall work impairment			
Baseline	36.4 (28.3)	33.6 (27.9)	31.8 (25.4)
Week 2	32.4 (27.8)	18.0 (22.4)	17.8 (22.9)
Week 4	29.4 (29.2)	16.8 (21.6)	14.7 (22.0)
Week 8	31.0 (27.9)	14.3 (22.3)	15.5 (22.8)
Daily activity impairment			
Baseline	33.2 (27.6)	31.3 (27.2)	32.2 (26.9)
Week 2	27.5 (26.5)	16.5 (21.5)	13.3 (18.1)
Week 4	23.8 (24.6)	12.3 (18.3)	10.8 (17.8)
Week 8	22.3 (25.3)	10.5 (17.6)	10.5 (17.5)

RUX, ruxolitinib cream; WPAI:SHP v2.0, Work Productivity and Activity Impairment Questionnaire–Specific Health Problem, version 2.0.

- Based on the DLQI questionnaire, a smaller proportion of patients who applied ruxolitinib cream vs vehicle reported being affected by AD "a lot" or "very much" in the shopping, social, and sport domains at Week 8 (**Figure 5**)

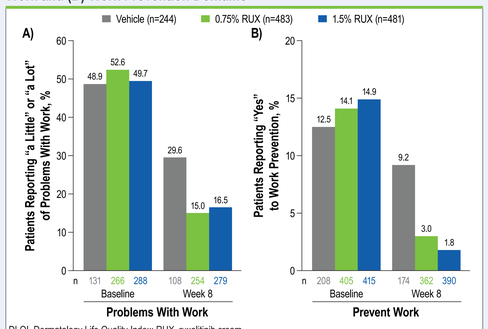
Figure 5. DLQI Response at Baseline and Week 8 for Daily and Leisure Activities*



DLQI, Dermatology Life Quality Index; RUX, ruxolitinib cream.
* Questions 3 (shopping), 5 (social), and 6 (sport) on the DLQI questionnaire.

- Fewer patients receiving ruxolitinib cream vs vehicle reported "a little" or "a lot" of problems with work and responded "yes" to whether work was prevented (per DLQI) at Week 8 (**Figures 6A** and **6B**)

Figure 6. DLQI Response at Baseline and Week 8 in the (A) Problems With Work and (B) Work Prevention Domains*



DLQI, Dermatology Life Quality Index; RUX, ruxolitinib cream.
* Questions 7A (problems with work) and 7 (prevent work) on the DLQI questionnaire.

Safety

- Ruxolitinib cream was well tolerated with an adverse event (AE) profile similar to vehicle[7]; no serious AEs were related to ruxolitinib cream

Conclusions

- **Ruxolitinib cream brought about substantial improvements in daily activity and work productivity for patients with AD, based on the WPAI:SHP v2.0**
  - **Patients who applied ruxolitinib cream reported less work time missed as well as less work impairment and daily activity impairment compared with vehicle**
- **Patients with AD who applied ruxolitinib cream reported less impairment in DLQI domains related to daily/leisure activities and work at Week 8 compared with those who applied vehicle**

Disclosures

LFE has served as an investigator, consultant, speaker, or data safety monitoring board member for AbbVie, Almirall, Arcutis, Asana, Dermavant, Eli Lilly, Forte Biosciences, Galderma, Ichnos/Glenmark, Incyte Corporation, Janssen, LEO Pharma, Novartis, Ortho Dermatologics, Otsuka, Pfizer, Regeneron, and Sanofi Genzyme. JIS received honoraria for advisory board, speaker, and consultant services from AbbVie, Asana, Bluefin, Boehringer Ingelheim, Celgene, Dermavant, Dermira, Eli Lilly, Galderma, GlaxoSmithKline, Glenmark, Incyte Corporation, Kiniksa, LEO Pharma, Menlo, Novartis, Pfizer, Realm, Regeneron, and Sanofi and research grants for investigator services from GlaxoSmithKline and Galderma. MEK, MEV, and KS are employees and shareholders of Incyte Corporation. MA has served as a consultant, researcher, and/or has received research grants from AbbVie, ALK-Abelló, Almirall, Amgen, Bayer, Beiersdorf, Biogen, Boehringer Ingelheim, Bristol Myers Squibb, Celgene, Centocor, Dermira, Eli Lilly, Galderma, Genzyme, GlaxoSmithKline, Hexal, Janssen, LEO Pharma, Medac, Menlo, MSD, Mylan B.V., Novartis, Pfizer, Regeneron, Sandoz, Sanofi, Stallergenes, Trevi, and XenoPort.

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References

1. Andersen L, et al. *Br J Dermatol*. 2020;182(4):1007-1016. **2.** Langan SM, et al. *Lancet*. 2020;396(10247):345-360. **3.** Whiteley J, et al. *Curr Med Res Opin*. 2016;32(10):1645-1651. **4.** Bao L, et al. *JAKSTAT*. 2013;2(3):e24137. **5.** Oetjen LK, et al. *Cell*. 2017;171(1):217-228. **6.** Quintas-Cardama A, et al. *Blood*. 2010; 115(15):3109-3117. **7.** Papp K, et al. *Br J Dermatol*. 2020;183(4):e116. **8.** Reilly MC, et al. *Pharmacoeconomics*. 1993;4(5):353-365. **9.** Wu JJ, et al. *J Eur Acad Dermatol Venereol*. 2019;33(2):318-324. **10.** Tillett W, et al. *Rheumatol Ther*. 2019;6(3):379-391. **11.** Finlay AY, Khan GK. *Clin Exp Dermatol*. 1994;19(3):210-216.

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