

MANAGEMENT OF ERYTHRODERMIC PSORIASIS WITH SYSTEMIC THERAPIES: A SYSTEMATIC REVIEW

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Table 1 - Summary of Non biological Systemic Treatments for Erythrodermic Psoriasis: Study Characteristics, Outcomes, and Safety

Non biological systemic Drugs	Author, years	Type of study	Number of patients	Age/Sex	Outcomes	Safety	Note
Methotrexate							
	Scott <i>et al.</i> 1968[15]	CRc	1	M	NA	NA	
10-25 mg	Tuyp <i>et al.</i> 1986[16]	CS	2	38/M, 47/M	PR in 3-4 years, BSA 90-75% to 50%	No AEs	
15 mg	Korstanje <i>et al.</i> 1989[17]	CRc	1	M	PASI 75	NA	
5-15 mg	Collins <i>et al.</i> 1992[18]	COHORT	9	NA	4 CR, 2 PR, 3 NR, 2 AEs (immediate)	2 AEs	Follow up: 32.8 months
0.2-0.4 mg/kg	Kumar <i>et al.</i> 1994[19]	CS	1 1 1	12/F 11.5/M 3/M	SR in 7 months, CR 14.4 months SR in 9 months, CR 14.8 months SR in 9 months	No AEs	Follow up: 38 months Follow up: 36 months Follow up: 46 months
	Van Der Vleuten <i>et al.</i> 1996[20]	CRc	1	83/F	NR 2 weeks	NA	
7.5 mg/mq	Kuijpers <i>et al.</i> 1997[21]	CS	1 1	58/M 68/M	CR in 5 months NR in 5 months	EP+stroke (death)	
15-25 mg/kg	Peters <i>et al.</i> 1999[22]	CRc	1	37/M	NR in 5 years	NA	
	Haustein <i>et al.</i> 2000[23]	COHORT	36	NA	28 CR (78%), 6 GR (17%), 2 PR (5%)	1 patients (F) developed breast cancer	
25 mg	Quinn <i>et al.</i> 2002[24]	CRc	1	52/M	NR	NA	

	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	liver fibrosis	
	Jha <i>et al.</i> 2005[26]	CRe	1	NA	SR in 6 months	NA	flare up after interruption during cardiac surgery
	Antonov <i>et al.</i> 2006[27]	CRe	1	59/M	PR	NA	induction by enalapril
	Kaur I et al. 2008[28]	CS	3	NA	NA	NA	
	Fraga <i>et al.</i> 2011[29]	CRe	1	7/F	SR	NA	
15-25 mg	Tridico <i>et al.</i> 2017[30]	CRe	1	55/M	NR	NA	
	Pangilinan <i>et al.</i> 2020[31]	CRe	1	31/M	NA	NA	HIV+, Patients self interruption
Etretinate							
75-100 mg to 25-100 mg	Mahrle <i>et al.</i> 1982[32]	COHORT	9	NA	6 CR, 3 GR in 8 months	NA	
	Wolska <i>et al.</i> 1983[33]	CRT	6	NA	4 CR	NA	
1 mg/kg/day	Rosinska <i>et al.</i> 1988[34]	CS	5	NA	2 CR in 1-2.5 years	NA	
0.8 mg/kg/day	Kokelj et al. 1998[35]	CRe	1	61/M	NR in 10 days	NA	
	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
	Kano et al. 2006[36]	CRe	1	47/M	NR in 20 days (AEs)	Fulminant hepatitis	1 months after cessation of etretinate complete remission
	Tsuji <i>et al.</i> 2009[37]	CRe	1	78/M	NA	Osseous bridge	
	Kurokawa R <i>et al.</i> 2018[38]	CRe	1	45/M	NR	NA	
Acitretin							
0.5-0.75 mg/kg	Selleras <i>et al.</i> 1996[39]	CRe	1	4/F	CR in 3 months	No AEs	congenital erythrodermic psoriasis, FU 7 years
	Van Der Vleuten <i>et al.</i> 1996[20]	CRe	1	83/F	NR in 3 weeks	NA	
0.5-0.75 mg/kg	Sprecher <i>et al.</i> 1999[40]	CRe	1	50/M	NR in 2 weeks	NA	
	Quinn <i>et al.</i> 2002[24]	CRe	1	52/M	NR (AEs)	hypertriglyceridemia	
	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
25 mg	Jaffer <i>et al.</i> 2005[41]	CRe	1	64/M	PR in 6 months	NA	
	Redighieri <i>et al.</i> 2010[42]	CRe	1	83/F	NR	NA	
0.2 mg/kg/day	Campione <i>et al.</i> 2014[43]	CRe	1 1	3/M 3/F	NR 1 months NR 1 months	NA	
	Charbit <i>et al.</i> 2016[44]	COHORT	2	NA	NR	NA	pediatric
	Valenzuela <i>et al.</i> 2018[45]	CRe	1	65/M	GR in 8 weeks	NA	HIV+
Acitretin 25mg	Pangilinan <i>et al.</i> 2020[31]	CRe	1	60/M	NR in 2 weeks	NA	HIV+

Cyclosporine							
7.5-8.5 mg/kg day	Picascia <i>et al.</i> 1987[46]	CS	2	NA	CR in 3 weeks	NA	
300 mg day, dose reduction in 2 months	Sutthipisal <i>et al.</i> 1988[47]	CR _e	1	48/F	CR in 3 weeks	no AEs	breast cancer concomitant (no relapse)
5 mg/kg	Bonifati <i>et al.</i> 1989[48]	CR _e	1	NA	CR in 6 weeks	no AEs	
	Cimitan <i>et al.</i> 1989[49]	CS	3	NA	NA	NA	
3-1.5 mg/kg	Bianchi <i>et al.</i> 1992[50]	CR _e	1	57/M	CR in 2-3 weeks	No AEs	Follow up 11 months, bullous pemphigoid concomitant
from 3 to 5 mg/kg	Mozzanica <i>et al.</i> (SIMPSO) 1993[51]	COHORT	33	19-71 years 75.8%M	CR in 67% (22/33) in 6.3 months, 27% PASI 70	15 patients AEs, discontinuation in 6 due to AEs: 2 hypertension and cerebrovascular disorders, 4 poor protocol compliance.	4 relapse 3-12 months during dose reduction (3), or after interruption (1)
	Van Der Vleuten <i>et al.</i> 1996[20]	CR _e	1	83/F	NR in 8 weeks	tremor, creatinine increasing	
4 mg/kg 4 mg/kg	Kokelj <i>et al.</i> 1998[35]	CS	1 1	64/M 69/M	NR in 1 week NR in 1 week	NA high fever/ worsening of clinical picture	
4-2 mg/kg	Sprecher <i>et al.</i> 1999[40]	CR _e	1	50/M	CR 40 days	NA	
6 mg/kg	Quinn <i>et al.</i> 2002[24]	CR _e	1	52/M	NR	NA	
	Rongioletti <i>et al.</i> 2003[25]	CR _e	1	57/F	NR	NA	
	Redighieri <i>et al.</i> 2010[42]	CR _e	1	83/F	CR relapse to suspension	NA	
	Fraga <i>et al.</i> 2011[29]	CR _e	1	7/F	NR, Improvement of general condition and of swollen joints	NA	
	Borghi <i>et al.</i> 2012[52]	CS	2	NA	NA	NA	Follow up 6 months
5mg/kg	Campione <i>et al.</i> 2014[43]	CR _e	1 1	3/M 3/F	CR in 1 years CR in 1 years	NA	
	Charbit <i>et al.</i> 2016[44]	COHORT	2	NA	1 GR, 1 NR	NA	pediatric
	Dogra <i>et al.</i> 2016[53]	CS	4	10 mean, 50% M	NR	NA	1 lost to fu, after 5 months 2 acitretin added and 1 methotrexate added, no other information
	Singh <i>et al.</i> 2017[54]	CR _e	1	44/F	NA	NA	bupropion/naltrexone induced
	Mugheddu <i>et al.</i> 2017[55]	CR _e	1 1	66M 28M	NR NR	Arterial hypertension/renal toxicity NA	

	Tan <i>et al.</i> 2017[56]	CRe	1	30/F	NA	NA	
	Ghalamkarpour <i>et al.</i> 2022[57]	CRe	1	45/M	CR in 20 days	NA	COVID induced
Phototherapy							
PUVA	Wasserman <i>et al.</i> 1978[58]	COHORT	3	NA	NR after more than 30 treatments	NA	
PUVA	DeGrosseiliers <i>et al.</i> 1981[59]	COHORT	2	NA	NR after 30 treatments	NA	
Heliotherapy	Snellman <i>et al.</i> 1993[60]	COHORT	15	NA	PR	worsening	
UVB nb	Redighieri <i>et al.</i> 2010[42]	CRe	1	83F	NR	NA	
UVB nb	Fraga <i>et al.</i> 2011[29]	CRe	1	7F	NR	evolution in exfoliative erythroderma after 3 treatments	
Apremilast							
	Arcilla <i>et al.</i> 2016[61]	CRe	1	76/M	PR, 44 to 26.4 PASI	NA	
	Papadavid <i>et al.</i> 2017[62]	CRe	1	54/M	PASI90, mean PASI from 49 to 4.8	NA	
	Krishnamoorthy <i>et al.</i> 2019[63]	CRe	1	54/M	PASI100, mean PASI from 72 to 0	NA	
	Megna <i>et al.</i> 2020[64]	CS	1	NA	CR	NA	
	Megna <i>et al.</i> 2022[65]	CRe	1	64 F	PASI75 at W16 and PASI90 at W22	no AEs	
Deucravacitinib							
6 mg/day	Imafuku <i>et al.</i> 2023[11]	CRT	8	46.5, 100% M	37,5% PASI 75 12,5% PASI 100, sPGA 0/1 50% dopo 52 settimane	No AEs	
6 mg/day	Hagino <i>et al.</i> 2024[66]	COHORT	2	NA	NA	NA	

Table 1 – This table summarizes the characteristics, outcomes, and safety data of all studies reporting on non-biological systemic treatments for erythrodermic psoriasis.

EP, Erythrodermic Psoriasis; *M*, Male; *F*, Female; *CRe*, Case Report; *CS*, Case Series; *COHORT*, Cohort Study; *RCT*, Randomized Controlled Trial; *CR*, Complete Response; *PR*, Partial Response; *NR*, No Response; *PASI*, Psoriasis Area and Severity Index; *BSA*, Body Surface Area; *AE(s)*, Adverse Event(s); *NA*, Not Available; *HIV*, Human Immunodeficiency Virus.

Reference numbers: please refer to the manuscript bibliography.

Table 2 - Summary of Biological Systemic Treatments for Erythrodermic Psoriasis: Study Characteristics, Outcomes, and Safety

Biological drugs	Author, years	Type of study	Number of patients	Age/Sex	Outcomes	Safety	Note
Infliximab							
10 mg/kg after 8 weeks	Quinn <i>et al.</i> 2002[24]	CRe	1	52/M	GR in 4 weeks,	NA	Follow up: 3 months
5 mg/kg	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	PR in 4 weeks	NA	
200 mg	Fihen <i>et al.</i> 2004[67]	CRe	1	69/F	CR after first infusion	NA	Follow up: 7 months, after interruption relapsing
2.7-4.4 mg/kg/6-8 weeks	Heikkila <i>et al.</i> 2005[68]	CS	4	mean 31.5/M	GR in 8-12 weeks	NA	2 patients added methotrexate, 1 patients switch to methotrexate+prednisolone, 1 patients switch to methotrexate+sulfopiridine+etanercept
	Lewis <i>et al.</i> 2006[69]	CRe	1	46	GR	NA	
	Pulhalon <i>et al.</i> 2007[70]	COHORT	5	NA	40% achieved PASI90 60% achieved PASI75 e PASI50	NA	
	Yip <i>et al.</i> 2008[71]	CS	1 1	53/M 45/M	PASI 75 31.1 to 5.4 PASI 75 improvement 39 to 8	No AEs	
	Santos-Juanes <i>et al.</i> 2009[72]	CS	1 1	32/F 41/F	NR in 14 weeks	No AEs	
	Torii <i>et al.</i> 2010[73]	COHORT	8	Mean 46.3	GR (67.9%) in 10 weeks. GR (87.5%) in 52 weeks.	87.5% adverse drug reaction	
	Viguier <i>et al.</i> 2012[74]	COHORT	24	40 mean, 71.4% M	33.3% PASI 75 in 4 weeks; 48% in 14 weeks	NA	
5 mg/kg at W0, W2, W6 then Q8W	Torii <i>et al.</i> 2016[75]	COHORT	45	NA	64.3% achieved PASI 75 45.2% achieved PASI 90	20% AEs, 11.11% infections	Follow up: 12 weeks
	Tsutsumi <i>et al.</i> 2016[76]	CRe	1	78/F	CR in 40 weeks	NA	
	Torii <i>et al.</i> 2016[77]	CRT	5	55.8, 80% M	GR	3 pts infections	Imiquimod induced
	Tridico LA <i>et al.</i> 2017[30]	CRe	1	55/M	CR	NA	Follow up: 11 years
	Vacas <i>et al.</i> 2017[78]	CRe	1	57/F	NA	recurrence of this zoonosis (chagas- mazza)	

	Kurokawa <i>et al.</i> 2018[38]	CRe	1	45/M	NA	NA	
						NA	
Etanercept						NA	
	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	PR	NA	
	Esposito <i>et al.</i> 2006[79]	COHORT	10	Mean 56.4, 80%M	80% PASI 50 in 12 weeks, 50% pasi 75 in 12 weeks, 80% PASI 50 in 24 weeks, 60% PASI 75 in 24 weeks, mean PASI from 39.1 to 5.1	1 IVU, 1 itch	
50 mg/twice a week for 12 weeks, then 50 mg/week	Viguier <i>et al.</i> 2012[74]	COHORT	6	Mean 40	50% PASI-50 in 12 weeks; 50% PASI 50 in 24 weeks	NA	Follow up: 24 weeks
50 mg	Agarwal <i>et al.</i> 2021[80]	CRe	1	34 F	PASI 90, PASI from 34,7 to 3.3 in 6 weeks	no AEs	HIV+
0.8 mg/kg	Campione <i>et al.</i> 2014[43]	CS	1 1	3/M 3/F	NR in 10 weeks	VAS infection	Twins patient with erythroderma since 8 months old
Adalimumab							
	Richetta <i>et al.</i> 2009[81]	CRe	1	48/M	CR in 3 weeks	NA	
	Santos-Juanes <i>et al.</i> 2010[72]	CS	1 1	32/F 41/F	NR in 8 weeks NR in 6 weeks	no AEs no AEs	
	Viguier <i>et al.</i> 2012[74]	COHORT	7	40 mean, 71.4% M	50% PASI 50 in 12 and 24 weeks	NA	DS 100% 12 weeks, 57% 24 weeks
	Kapoor <i>et al.</i> 2017[82]	CRe	1	36/F	CR	NA	
	Costa Blasco <i>et al.</i> 2024[83]	CRe	1	29/M	NA	NA	
Certolizumab pegol							
Certolizumab 200 mg Q2W Certolizumab 400 mg Q2W	Okubo <i>et al.</i> 2022[13]	CRT	7 8	mean 56, 100% M mean 47,8 75% M	26.7% PASI 75 or 90 in 4 weeks, 64.3% PASI75 or 90 in 16 weeks, 83.3% PASI 75, 75% PASI 90 in 52 weeks	no AEs	
Golimumab							
	Lee <i>et al.</i> 2015[84]	CRe	1	32/M	PASI 75, 40.8 to 7.5	NA	
Ustekinumab							

45 mg	Santos-Juanes <i>et al.</i> 2009[72]	CS	1 1	32/F 41/F	PASI 75 in 4 weeks; PASI 90 in 12 weeks	no AEs	
45 mg	Wang <i>et al.</i> 2011[85]	CS	8	Mean 41.6, 88.9% M	50% PASI 75 in 12 weeks and 24 weeks	NA	Follow up: 40 weeks
45 mg	Buggiani <i>et al.</i> 2012[86]	CRe	1	NA/M	PASI 90 in 10 months, mean PASI 22 to 2	NA	
45-90 mg	Castineiras <i>et al.</i> 2012[87]	CRe	1	47/M	NR in 4 weeks (45 mg), PASI 75 after 8 week; PASI90 at 114 week, mean PASI 45 to 2.7	NA	
45 mg	Viguier <i>et al.</i> 2012[74]	COHORT	3	Mean 40, 71.4% M	33.3% PASI 50 in 6 weeks, 66.6% PASI 50 in 12 weeks, 100% PASI 50 in 24 weeks	NA	
45 mg	Saraceno <i>et al.</i> 2013[88]	CS	1 1	59/M 53/F	GR in 4 weeks (PASI 10); in 12 weeks (PASI 3) PASI75 was reached (meanPASI 8.4) in 2 weeks, PASI 100 in 12 weeks	NA	After eye surgery, he developed again erythroderma
45 mg	Stinco <i>et al.</i> 2014[89]	COHORT	1 1 1	66/M 51/M 65/M	100% PASI50 in 4weeks and 100% PASI75 in 12 weeks	NA	
45 mg	Koutsoukou <i>et al.</i> 2014[90]	CRe	1	60/F	GR in 4 weeks	NA	52 weeks
	Errichetti <i>et al.</i> 2014[91]	CRe	1	36/M	GR in 4 weeks	Reactivation LTBI	Ustekinumab stopped after LTBI reactivation
45-90 mg	Pescitelli <i>et al.</i> 2015[92]	COHORT	22	Mean 49; 68.2% M	66.6% PASI 75 in 16 weeks, 68.2% PASI 90 in 28 weeks 86.3% PASI 75, 90.9% PASI 50	NA	

	Kim <i>et al.</i> 2016[93]	CS	1 1	47/M 26/M	PASI 75 in 28 weeks PASI 75 in 28w, PASI 90 in 112w	Reactivation LTBI	
	el-Azhary <i>et al.</i> 2016[94]	CRe	1	64/M	CR	NA	
80 mg	Pangilinan <i>et al.</i> 2020[31]	CRe	1	60/M	GR in 2 weeks	NA	HIV+
	Damiani <i>et al.</i> 2019[95]	COHORT	3	NA	PASI 100 in 24 weeks	NA	
Secukinumab							
	Mugheddu <i>et al.</i> 2017[55]	CS	1 1 1	66/M 28/M 61/M	PASI 90 in 8 weeks and PASI 100 in 12 weeks PASI 100 in 8 weeks PASI 75 in 4 weeks	No AEs	
	Weng <i>et al.</i> 2018[96]	CS	10	Mean 42.6, 71.4% M	GR, mean PASI 32.7 to 8.7	NA	
	Mateu-Puchades <i>et al.</i> 2018[97]	CS	5	Mean 47.6, 100% M	60% PASI 75, in 16 weeks, 100% PASI 90, 80% achieved PASI 100	NA	
	Dogra <i>et al.</i> 2018[53]	CRe	1	13/M	PASI 90, mean PASI from 50 to 1.2	No AEs	
	Mashima <i>et al.</i> 2018[98]	CRe	1	85/M	NA	NA	
	Galluzzo <i>et al.</i> 2018[99]	CRe	1	55/M	PASI 75, mean PASI from 42 to 6	NO AEs	
	Shibata <i>et al.</i> 2019[100]	CRe	1	61/F	PASI 100, mean PASI from 22 to 0	NO AEs	EP after the initiation of haemodialysis
	Lo <i>et al.</i> 2019[101]	CS	9	Mean 48, 77.8% M	NR		
300mg from W0 to W4, then Q4W.	Damiani <i>et al.</i> 2019[95]	COHORT	13	mean 40, 69.2% M	GR 76.9%; NR 23.1%; 38.5% PASI90 and PASI100	one patient developed generalized urticaria, one experienced recurrent oral candidiasis.	All patients were followed for 52 weeks.
Secukinumab 300mg W0, W4 and Q4W	Pizzatti <i>et al.</i> 2020[102]	CRe	1	44/M	PASI50 in 7 day. PASI 100 in 8 weeks, mean PASI from 31.5 to 0	NA	Follow up: 52 weeks
Secukinumab 300mg W0, W4 and Q4W	Pangilinan <i>et al.</i> 2020[31]	CRe	1	31/M	PASI100, mean PASI from 24 to 0		
	Lu <i>et al.</i> 2020[103]	CRe	1	70/M	CR in 12 weeks	no AEs	

	Liu <i>et al.</i> 2021[104]	CS	1 1	46/M 50/F	PASI 90 in 12 weeks. PASI 90 in 12 weeks, PASI 100 in 32 weeks, mean PASI from 40 to 0	no AEs	Follow up: 40 weeks
	Ozcan <i>et al.</i> 2021[105]	CRc	1	31/M	PASI 75 in 12 weeks, PASI 100 in 52 weeks, mean PASI from 38 to 0	no AEs	
	Carriero 2022[106]	CRc	1	72/M	PASI 100 in 16 weeks, mean PASI from 60 to 0	no AEs	Follow up: 104 weeks
	Avallone <i>et al.</i> 2022[107]	COHORT	12	Mean 33, 80% M	82% PASI 90 54% PASI 100 in 48 weeks	NA	
	Zhao <i>et al.</i> 2022[108]	CRc	1	7/M	PASI 100 in 18 weeks, mean PASI from 37.5 to 0.	no AEs	CoronaVac induced
	Avallone <i>et al.</i> 2023[109]	COHORT	11	NA	NA	NA	
	Liu <i>et al.</i> 2023[110]	CRc	1	6/M	CR	NA	Holocarboxylase synthetase deficiency; follow up: 2 years
	Reymundo <i>et al.</i> 2023[111]	COHORT	16	Mean 54.8, 68.8% M	73.3% PASI ≤5, 53.3% ≤2 in 12 months, mean PASI from 35.5 to 2.6 in 36 months	NA	Follow up: 156 weeks.
Ixekizumab							
	Saeki <i>et al.</i> 2014[112]	CRT	9	NA	100% PASI75, 62.5% PASI90 25.0% PASI100 in 12 weeks. 100.0% PASI75, 87.5% PASI90 12.5% PASI100 in 24 weeks.	NA	100% had both fingernail and scalp psoriasis. NAPSI, and PSSI improved also.
	Saeki <i>et al.</i> 2017[113]	COHORT	8	Mean 50.2, 87.5% M	GR, mean PASI from 42.8 to 2.8	Infections in 6 patients, Allergic reactions/hypersensitivity in 2 patients	
	Okubo <i>et al.</i> 2018[14]	CRT	8	Mean age 50, 100% M	NA	NO AEs	
	Megna <i>et al.</i> 2019[114]	CRc	1	66/F	PASI 100, mean PASI from 58 to 0	NO AEs	
	Lo <i>et al.</i> 2019[101]	CS	9	Mean 48, 77.8% M	77.8% PASI50, 55.6% PASI 75 11.1% PASI 90 in 12 weeks, mean PASI from 30.2 to 4.4	Site injection reaction	
	Trovato <i>et al.</i> 2020[115]	CS	1 1	55/F 67/M	PASI 90 in 6 weeks. PASI 90 in 8 weeks	no AEs	
	Vinaixa Aranzazu <i>et al.</i> 2021[116]	CRc	1	55/M	PASI 100 in 3 months, mean PASI from 30.8 to 0	no AEs	durvalumab-tremelimumab induced in a cancer patient, 9 months after ixekizumab discontinuation (3 months) still CR
	Morita <i>et al.</i> 2022[117]	COHORT	5	Mena 42.2, 60% M	50% PASI 75 25% PASI 90 in 12 weeks, 75% PASI75 25% PASI90 in 20 weeks, mean PASI from 41.1 to 8.6	one episode of convulsive seizure	
	Avallone <i>et al.</i> 2022[107]	COHORT	3	Mean 48, 100% F	NA	NA	

	Pinto-Pulido <i>et al.</i> 2022[118]	CRe	1	M/55	PASI 100 in 8 weeks, mean PASI from 35.5 to 0	no AEs	Follow up: 10 months
	Avallone <i>et al.</i> 2023[109]	COHORT	4	NA	NA	NA	
Brodalumab							
	Yamasaki <i>et al.</i> 2017[119]	OL study	12	Mean 50.8	GR, mean PASI from 36 to 2.02	Nasopharyngitis in 6 patients	
	Bernardini <i>et al.</i> 2020[120]	CRe	1	52/M	PR, mean PASI from 42 to 22 in 4 weeks		
	Megna <i>et al.</i> 2019[121]	CS	1 1	42/M 72/M	PASI75 in 3 weeks, PASI90 in 12 weeks PASI90 in 3 weeks, PASI100 in 12 weeks	no AEs no AEs	
	Avallone <i>et al.</i> 2023[109]	COHORT	7	NA	NA	NA	
	Mota <i>et al.</i> 2023[122]	CS	1 1 1	40/M 59/M 43/M	PASI 100 in 14 weeks, mean PASI from 48 to 0 PASI 100 in 8 weeks, mean PASI from 43 to 0 PASI 100 in 8 weeks, mean PASI from 31 to 0	no AEs no AEs no AEs	Follow up: 104 weeks Follow up: 52 weeks Follow up: 116 weeks
Bimekizumab							
	Valenti <i>et al.</i> 2022[123]	CRe	1	44/M	PASI 90 in 4 weeks, mean PASI from 39 to 1	no AEs	
	Megna <i>et al.</i> 2023[124]	CRe	1	40/M	PASI 100 in 4 weeks, mean PASI from 55 to 0	no AEs	
	Licata <i>et al.</i> 2024[125]	CRe	1	NA	CR	NA	
Guselkumab							
	Sano <i>et al.</i> 2018[126]	CRT	11	Mean 54.6, 90.9% M	NA	Nasopharyngitis in 6 patients	
Guselkumab 100mg W0, W4 and Q8W	Megna <i>et al.</i> 2020[127]	CRe	1	38/M	PASI 100 in 20 weeks		Non-Hodgkin lymphoma in 2008, follow up: 48 weeks

	Chiang <i>et al.</i> 2021[128]	COHORT	13	Mean 50.5, 92.3% M	15.4% PASI 75 in weeks 4, 38.5% PASI 75 12 weeks, 53.9% PASI 75 in 20 weeks, 46.2% PASI 75 in 28 weeks	NA	
	Avallone <i>et al.</i> 2023[109]	COHORT	2	NA	NA	NA	
	Welsh <i>et al.</i> 2023[129]	CS	2	65/F, 51/M	complete response after 16 weeks	no AEs	
	Tada <i>et al.</i> 2024[130]	COHORT	5	NA	NA	NA	
Risankizumab							
	Suleiman <i>et al.</i> 2020[131]	Clinical trial phase 1	9	NA	NA	NA	
	Alajlan <i>et al.</i> 2022[132]	CRe	1	48/M	CR in 16 weeks	NA	
	Yamanaka <i>et al.</i> 2022[12]	CRT	9	Mean 40.2, 88.9% M	77.8% PASI 90 in 16 weeks	No AEs	Follow up: 160 weeks
	Avallone <i>et al.</i> 2023[109]	COHORT	3	NA	NA	NA	
	Megna M <i>et al.</i> 2023[133]	CRe	1	62/M	PASI 100 in 16 weeks, mean PASI from 37 to 0	no AEs	
Tildrakizumab							
	Megna M <i>et al.</i> 2021[134]	CRe	1	61/M	PASI 100 in 16 weeks, mean PASI from 38 to 0	No AEs	
	Trevisan <i>et al.</i> 2022[135]	CRe	1	56/M	PASI 100 in 16 weeks, mean PASI from 40 to 0	No AEs	

Table 2 – This table provides a comprehensive summary of studies evaluating biological systemic therapies for erythrodermic psoriasis, including efficacy outcomes and safety profiles.

EP, Erythrodermic Psoriasis; *M*, Male; *F*, Female; *CRe*, Case Report; *CS*, Case Series; *COHORT*, Cohort Study; *RCT*, Randomized Controlled Trial; *OL*, Open Label; *CR*, Complete Response; *PR*, Partial Response; *NR*, No Response; *PASI*, Psoriasis Area and Severity Index; *BSA*, Body Surface Area; *AE(s)*, Adverse Event(s); *HIV*, Human Immunodeficiency Virus; *LTBI*, Latent Tuberculosis Infection; *NAPSI*, Nail Psoriasis Severity Index; *PSSI*, Psoriasis Scalp Severity Index; *NA*, Not Available;

Reference numbers: please refer to the manuscript bibliography.

Table 3 - Summary of anecdotal reports and combination therapies for Erythrodermic Psoriasis: Study Characteristics, Outcomes, and Safety

Other drugs	Author, years	Type of study	Number of patients	Age/Sex	Outcomes	Safety	Note
Corticosteroids	Van Der Vleuten <i>et al.</i> 1996[20]	CRe	1	83/F	NR in 3 weeks	NA	
Mycophenolate mofetil	Geilen <i>et al.</i> 1998[136]	CRe	1	NA	CR	NA	
Hydroxiurea	Quinn <i>et al.</i> 2002[24]	CRe	1	52/M	NR	NA	200 mg
6 tioguanina	Quinn <i>et al.</i> 2002[24]	CRe	1	52/M	NR	lowering haematocrit and WBC counts	Interruption due to AEs
Azathyoprine (150 mg)	Quinn <i>et al.</i> 2002[24]	CRe	1	52/M	NR	NA	
Tacrolimus	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Bexarotene	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Thioguanine	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Mycophenolate mofetil	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Azathyoprine	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Carbamazepine	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Cyclophosphamide	Rongioletti <i>et al.</i> 2003[25]	CRe	1	57/F	NR	NA	
Prednisolone systemic	Gary <i>et al.</i> 2004[67]	CRe	1	69/F	NR	NA	
Alefacept	Prossick <i>et al.</i> 2006[137]	CRe	1	NA	CR	NA	
Efalizumab	Viguier <i>et al.</i> 2012[74]	COHORT	2	NA	NR	NA	
Tripterygium glycoside	Wang <i>et al.</i> 2018[138]	CRe	1	41/F	PR in 2 weeks	NA	Hydroxychloroquine-Induced
Low-dose naltrexone	Beltran Monasterio <i>et al.</i> 2019[139]	CRe	1	38/F	PASI 100, mean PASI from 48 to 0	NA	GR QoL
Goeckerman therapy (UVB+coal tar)	Myers <i>et al.</i> 2021[140]	CRe	1	46/M	CR in 12 weeks	no AEs	
Combined therapies	Author, years	Type of study	Number of patients	Age/Sex	Outcomes	Safety	Note
Methotrexate+prednisone+mercaptopurine	Tay <i>et al.</i> 1970[141]	CRe	1	M	NA	NA	
Methotrexate+prednisolone	McDonald 1971[142]	CRe	1	23/F	CR in 3 months	no AEs	corneal ulcers and hair loss associated, prednisone 120 mg +methotrexate 25 mg
Methotrexate+leucovorin	Zachariae <i>et al.</i> 1982[143]	COHORT	3	NA	GR	no AEs	100 mg IV methotrexate
NbUVB+Coal Tar+0.05%+diflorasone diacetate ointment	Spencer <i>et al.</i> 1985[144]	COHORT	1	NA	NR	NA	
Methotrexate+etretinate	Tuyp <i>et al.</i> 1986[16]	CS	2	38/M, 47/M	CR in 30 months	elevation of transaminases	10-25 mg methotrexate, 20-70 mg etretinate,
Methotrexate+PUVA	Tuyp <i>et al.</i> 1986[16]	CS	2	38/M, 47/M	PR in 3 years	NMSC	10-25 mg methotrexate
Methotrexate+steroids	Rosinska <i>et al.</i> 1988[34]	CS	4	NA	NR	NA	
Cyclosporine+etretinate	Korstanje <i>et al.</i> 1989[17]	CRe	1	50/M	PASI 90 in 4 months	no AEs	5 mg/kg cyclosporin, 0.7 mg/kg etretinate, 10 months fu
NbUVB+calcipotriene	Van Der Vleuten <i>et al.</i> 1996[20]	CRe	1	83/F	CR in 10 weeks	No AEs	calcipotriene 100 mg twice day
Acitretin+coal tar+local steroids	Kujpers <i>et al.</i> 1997[21]	CRe	1	67/M	NR in 8 months	NA	0.5 mg/kg acitretin
Acitretin+cyclosporin	Kujpers <i>et al.</i> 1997[21]	CS	1 1 1	58/M 83/M 67/M	NR in 6 weeks NR in 4 weeks PR in 11 weeks	cholesterol and blood pressure increased dry eyes and lips increasing blood pressure, and serum creatinine, dry lips and nose	3 mg/kg cyclosporin+ 0.3-0.5 mg/kg acitretin 3 mg/kg cyclosporin+0.4 mg/kg acitretin 3 mg/kg cyclosporin+0.4 mg/kg acitretin

Cyclosporine+calcipotriene	Kujpers <i>et al.</i> 1997[21]	CRe	1	83/M	GR in 6 weeks	no AEs	
Methotrexate+steroids+acitretin	Kujpers <i>et al.</i> 1997[21]	CRe	1	83/M	NR in 3 weeks	NA	
Acitretin+PUVA	Muchenberger <i>et al.</i> 1997[45]	CRe	1	56/M	PASI 90 in 4 weeks, mean PASI from 20 to 0.4	skin dryness	PUVA 1j/cm2+0.5 mg/kg acitretin
Cyclosporine+etretinate	Kokelj <i>et al.</i> 1998[35]	CS	1 1 1	64/M 69/M 61/M	PR in 7 days, CR in 14 days. CR in 18 days GR in 7-18 days	NA noAEs NA	3.5-0 mg/kg cyclosporine for 6 weeks, 0.5 mg/kg etretinate per 10 weeks 3.5 mg/kg cyclosporin+etretinate 0.4-0.3 mg/kg for 5 months 3.5 mg/kg cyclosporin+0.5 mg/kg etretinate
Acitretin+azathioprin+prednisolone	Peters <i>et al.</i> 1999[22]	CRe	1	37/M	CR	NA	
Mycophenolate mofetil+steroids	Peters <i>et al.</i> 1999[22]	CRe	1	37/M	NR in 5 weeks	NA	
Acitretin+azathioprin	Roadar <i>et al.</i> 1999[146]	CRe	1	59/M	CR	NA	Follow up: 28 months
PUVA+etretinate	Quinn <i>et al.</i> 2002[24]	CRe	1	52/M	NR	hypertriglyceridemia	50mg etretinate
Cyclosporine+nbUVB	Franchi <i>et al.</i> 2004[147]	CS	7	Mean 47.9	PASI 90 in 9 weeks, mean PASI from 67.8 to 5.7	NA	cyclosporine 200 mg 3 weeks, 100 mg 2 weeks
Methotrexate+prednisolone+infliximab	Yip <i>et al.</i> 2008[71]	CRe	1	29/M	PASI 75, mean PASI 31.3 to 6.6	no AEs	
Methotrexate+efalizumab	Hernandez Garcia <i>et al.</i> 2008[148]	CRe	1	27/M	PR	no AEs	
Cyclosporine+systemic steroids	Bruzzese <i>et al.</i> 2009[149]	CRe	1	29/M	CR in 3 months	NA	infliximab-induced erythrodermic psoriasis
Etanercept+infliximab	Romero-Mat� <i>et al.</i> 2010[50]	CRe	1	78/M	GR	no AEs	
Isoniazid+sertraline	Redighieri <i>et al.</i> 2010[42]	CRe	1	83/F	CR in 3 months	NA	
Methotrexate+etanercept	Fraga <i>et al.</i> 2011[29]	CRe	1	7/F	GR	no AEs	Follow up: 2 years
Adalimumab+topical salicylic acid+calcipotriene	Numoli <i>et al.</i> 2014[151]	CRe	1	62/M	CR in 12 weeks		

Methotrexate+glycyrrhizin compound	Si <i>et al.</i> 2014[152]	CRe	1	68/M	CR in 6 months		methotrexate 15 mg weekly and compound glycyrrhizin 150 mg daily.
Cyclosporine+oral steroids	Errichetti <i>et al.</i> 2014[91]	CRe	1	36/M	NR	LTBI	
Metotrexate+topical steroids	el-Azhary <i>et al.</i> 2016[94]	CRe	1	64/M	PR in 3 months		
Etanercept+pegylated interferon	Talat <i>et al.</i> 2017[153]	CRe	1	28/M	PR	NA	
Cyclosporine+Intravenous dexamethasone	Zhang <i>et al.</i> 2019[154]	CRe	1	74/M	PR in 11 days, CR in 2 years	NA	EP presented with IgAN. Treatment= dexamethasone (5mg/day) and oral cyclosporine (200mg twice a day)
Apremilast+prednisone	Mugheddu <i>et al.</i> 2020[55]	CRe	1	45/M	SR	SARS-CoV2 pneumonia	recurrent oligodendroglioma (chemotherapy with temozolomide). prednisone 50mg/day+apremilast 30mg/twice a day. Apremilast then tapered gradually to 12.5 mg/die. Apremilast was not stopped during Sars-Cov2 therapy
Methotrexate+hydrocortisone hemisuccinate	Cretu <i>et al.</i> 2020[155]	CRe	1	37/M	PR in 14 days		Upper respiratory infection induced. hydrocortisone hemisuccinate i.v. 6 mg/kg (600 mg/day) and methotrexate, 10 mg/week.
Acitretin+systemic steroids	Bernardini <i>et al.</i> 2020[120]	CRe	1	52/M	NR	polyglobulia and diagnosis of secondary polycythemia	
Secukinumab+acitretin	Polat Ekinci <i>et al.</i> 2021[156]	CRe	1	37/M	GR in 6 weeks	oral candidiasis	

Table 3 – This table lists anecdotal reports and combination therapies used for erythrodermic psoriasis, detailing study characteristics, clinical responses, and safety profiles.

EP, Erythrodermic Psoriasis; *M*, Male; *F*, Female; *CRe*, Case Report; *CS*, Case Series; *COHORT*, Cohort Study; *RCT*, Randomized Controlled Trial; *CR*, Complete Response; *PR*, Partial Response; *NR*, No Response; *PASI*, Psoriasis Area and Severity Index; *BSA*, Body Surface Area; *AE(s)*, Adverse Event(s); *NA*, Not Available; *QoL*, Quality of Life; *IV*, IntraVenous; *EV*, *PUVA*, Psoralen UltraViolet A; *IgAN*, IgA nephropathy; Reference numbers: please refer to the manuscript bibliography.