

5-GRASS-POLLEN SLIT EFFECTIVENESS IN SEASONAL ALLERGIC RHINITIS: IMPACT OF SENSITIZATION TO SUBTROPICAL GRASS POLLEN

ABSTRACT ID
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METHODS: Observational study of 63 Australian patients (≥ 5 years) prescribed 5-grass pollen SLIT tablet for SAR. Primary objective (patient treatment satisfaction) was met in a large majority. A pre-specified subgroup analysis assessed the impact of poly-sensitization to subtropical grass pollen upon AR symptom intensity following AIT during three consecutive pollen seasons.

RESULTS: Ryegrass grass pollen was the most common grass pollen sensitization ($n = 59$; 93.7%) and where relevant allergy history was documented, ryegrass pollen allergy was near universal ($n = 55/56$; 98.2%). 74.6% ($n = 47$) were 'poly-sensitized' to subtropical and temperate grass pollen. 23.8% ($n = 15$) were 'mono-sensitized' to temperate grass pollen. From the first pollen season, both groups showed considerable symptom score improvements (total rhinoconjunctivitis symptom score [TRSS (0-24)] vs baseline*), sustained during the second and third pollen season (reaching 70-85% improvement; $P < 0.01$). During the first pollen season, symptom scores were lower in those poly-sensitized vs those mono-sensitized ($P = 0.0297$; Hodges-Lehmann Estimator analysis). Symptom scores in those mono-sensitized improved further over time, minimizing differences between groups. Symptom score improvements in those poly-sensitized were not affected by geographical location (above vs below 37°S) and expected level of exposure to subtropical grass pollen.

CONCLUSION: 5-grass pollen SLIT is effective in SAR patients from the first pollen season, irrespective of poly-sensitization status to subtropical grass pollen

*Individual AR symptom evaluations (sneezing, itchy eyes, runny nose, blocked nose, eyes itching, eyes watering) were converted to a score on a scale of 0-4 (not at all bothered = 0; slightly bothered = 1; quite bothered = 2; very bothered = 3; extremely bothered = 4) and combined into a Total Rhinoconjunctivitis Symptom Score (TRSS; 0-24). Change versus baseline analysis of the TRSS values during pollen seasons was used to assess 5-grass pollen SLIT treatment effectiveness.

City	Typical primary sensitizing grass pollen in SAR patients ¹	Latitude	Typical pattern of grass pollen exposure ²
Brisbane	Subtropical grass pollen	<37°S	Temperate (ryegrass) grass pollen (peak in spring) + Subtropical grass pollen (secondary peaks from summer onwards)
Perth	Temperate grass (ryegrass) pollen	<37°S	
Sydney	Temperate grass (ryegrass) pollen	<37°S	
Adelaide	Temperate grass (ryegrass) pollen	<37°S	Mainly temperate (ryegrass) grass pollen (peak in spring, or later in cooler regions)
Melbourne	Temperate grass (ryegrass) pollen	>37°S	
Hobart	Temperate grass (ryegrass) pollen	>37°S	

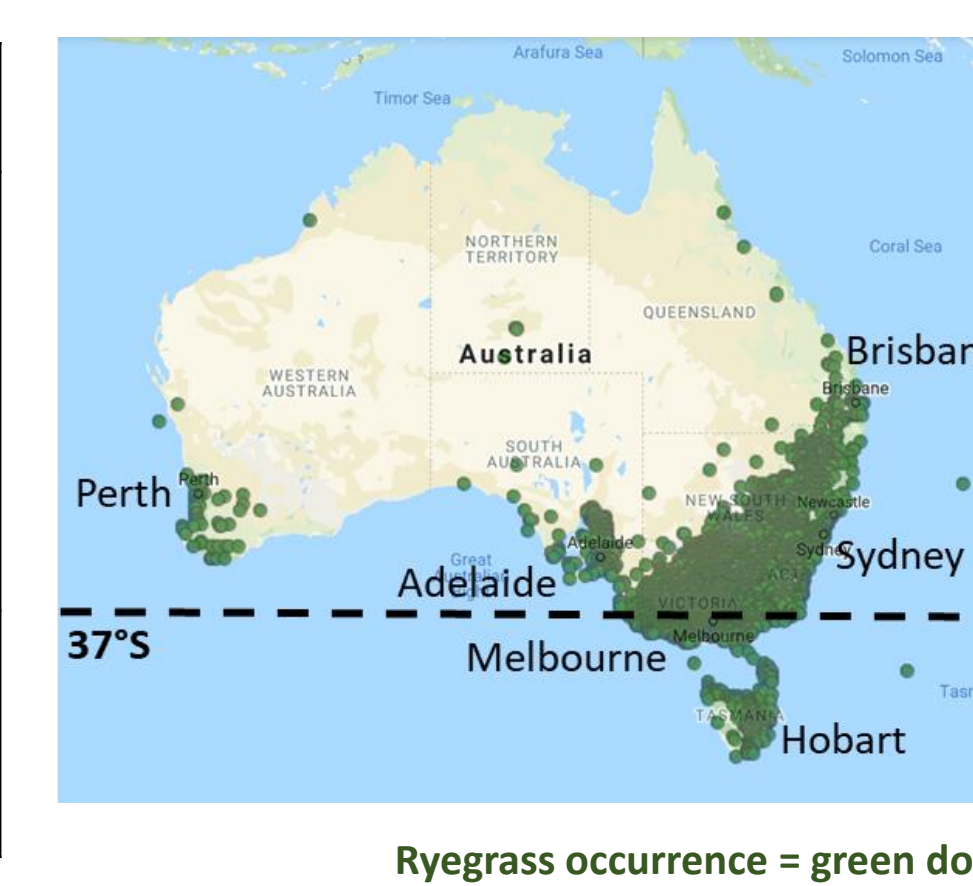


Figure 1. Typical patterns of grass pollen sensitization¹ and exposure² in Australia

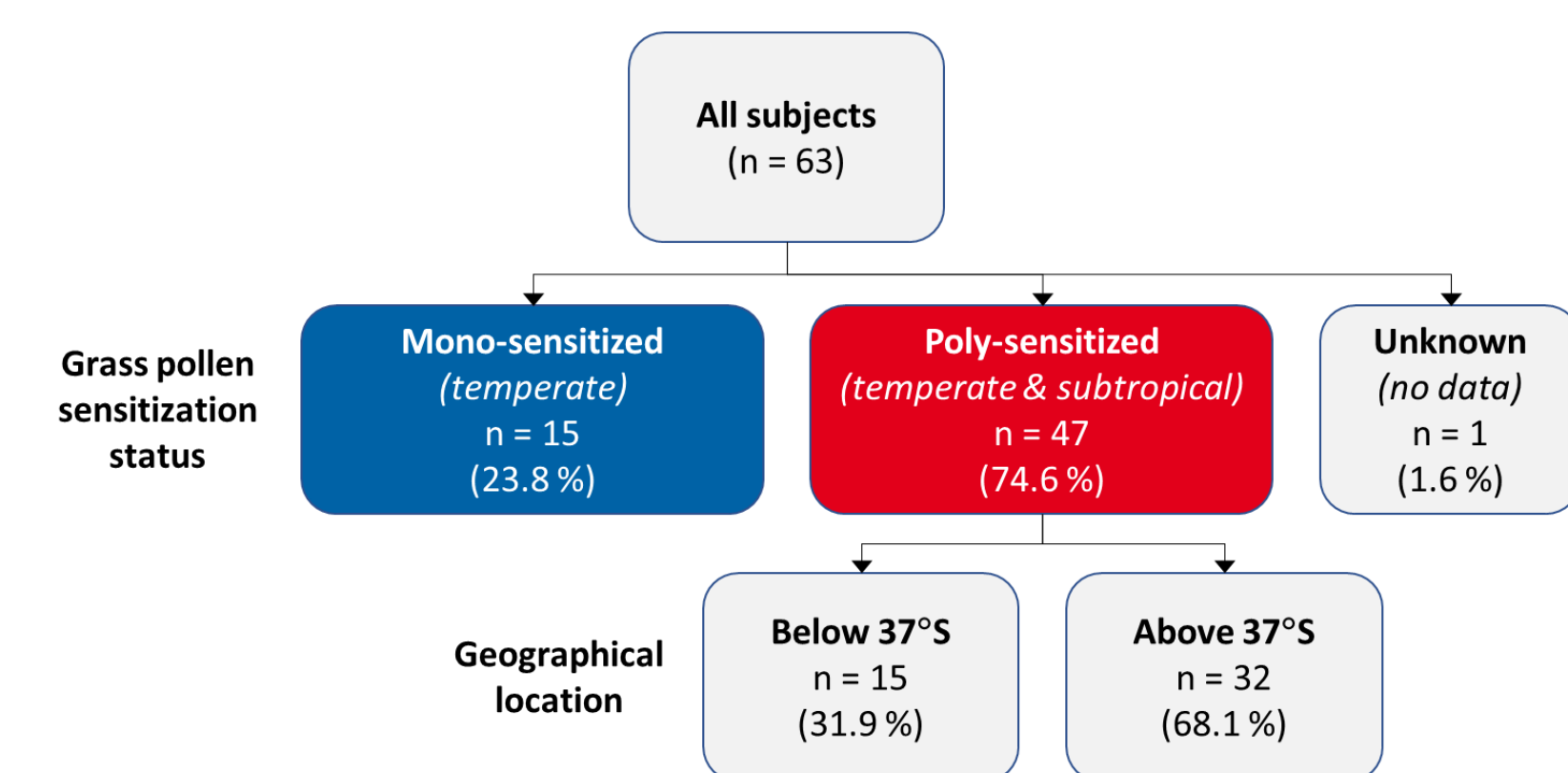


Figure 2. Flow chart of study subjects stratified by patient subgroups. Mono-sensitized = sensitized to temperate grasses only. Poly-sensitized = sensitized to temperate and subtropical grass pollens. Below/above 37°S = patient geographical location.

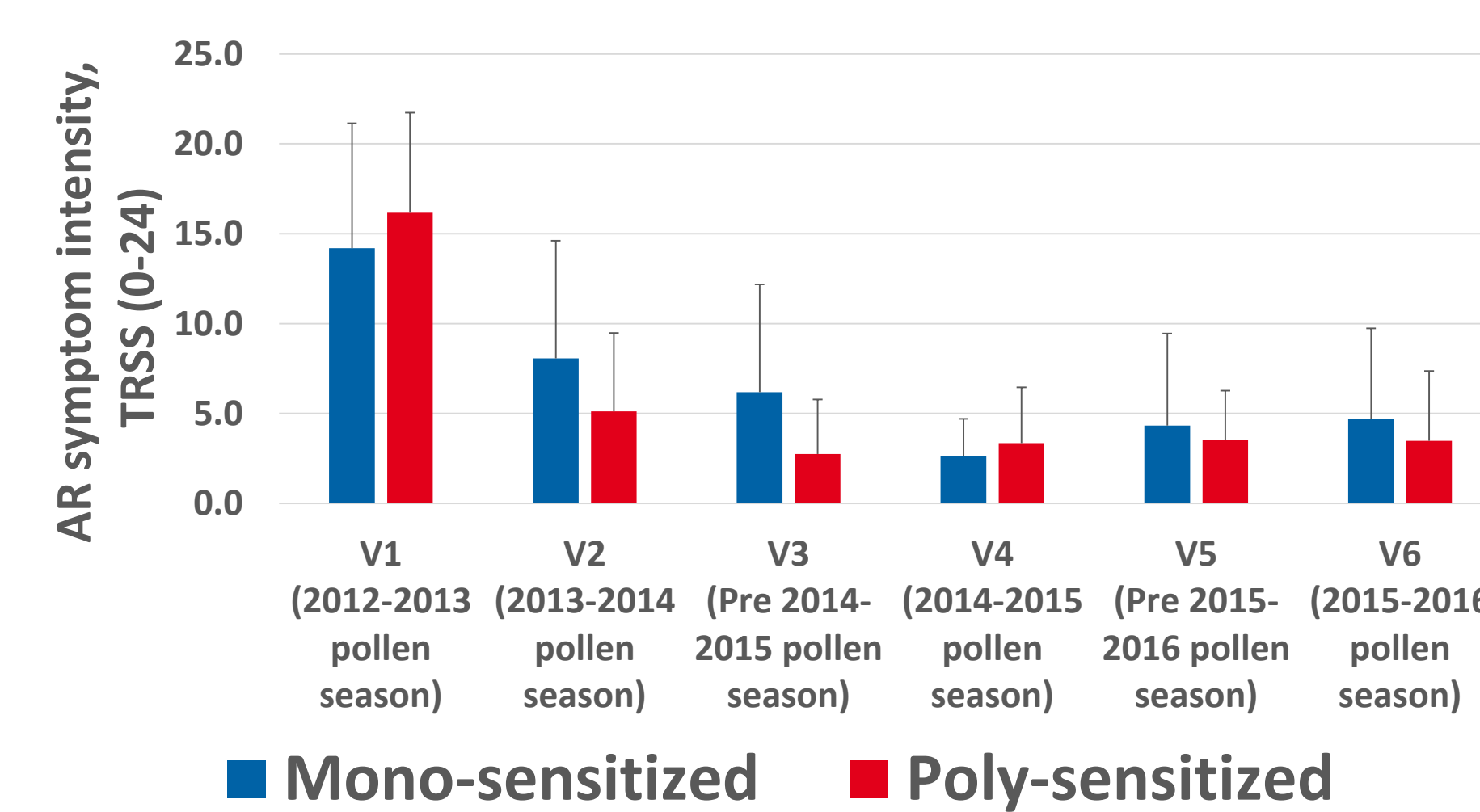


Figure 4. TRSS (0-24) values in sub-groups stratified according to grass pollen sensitization status. Mono-sensitized = sensitized to temperate grasses only. Poly-sensitized = sensitized to temperate and subtropical grass pollens.

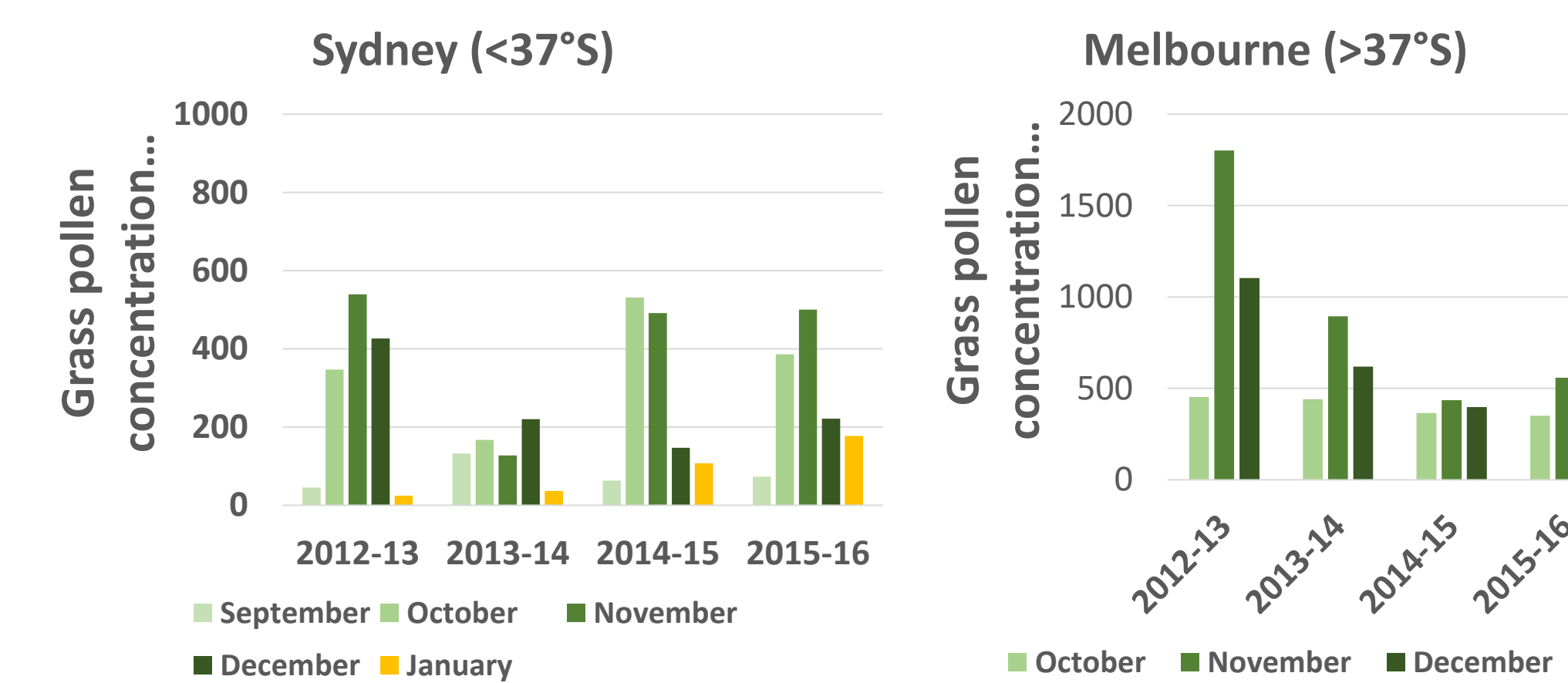


Figure 3. Cumulative monthly grass pollen counts during study period.

Visit	Statistics	All subjects		Mono-sensitized	Poly-sensitized
		N	Mean TRSS (0-24) change vs baseline (SD)		
V2	N	54		15	39
	Mean TRSS (0-24) change vs baseline (SD)	-9.9 (7.1)		-6.1 (8.8)	-11.4 (5.8)
	Difference vs mono-sensitized (Hodges-Lehmann Estimator analysis)			-6	$p < 0.0001$
V4	N	37		8	29
	Mean TRSS (0-24) change vs baseline (SD)	-12.4 (5.7)		-12.0 (7.3)	-12.5 (5.3)
	Difference vs mono-sensitized (Hodges-Lehmann Estimator analysis)			-1	$p = 0.8398$
V6	N	27		7	20
	Mean TRSS (0-24) change vs baseline (SD)	-11.5 (6.0)		-12.0 (7.9)	-11.4 (5.5)
	Difference vs mono-sensitized (Hodges-Lehmann Estimator analysis)			1	$p = 0.8048$

Table 1. Impact of grass pollen sensitization status on TRSS (0-24) values during pollen seasons: Change versus baseline (V1) analysis. Mono-sensitized = sensitized to temperate grasses only. Poly-sensitized = sensitized to temperate and subtropical grass pollens. Baseline TRSS values were similar for poly-sensitized patients (baseline TRSS = 16.16; $n = 45$) and mono-sensitized patients (baseline TRSS = 14.20; $n = 15$). Hodges-Lehmann Estimator was used to estimate differences between median TRSS values for the mono- and poly-sensitized groups. Paired Student T-Test was used for statistical comparisons.

Key Points

- Assessing how a patient's polysensitization status should influence AIT treatment selection remains a key challenge: more studies are required to clarify how poly-sensitization status impacts on AIT effectiveness^{4,5}
- Temperate grass (e.g. ryegrass) pollen is a major driver of seasonal allergic rhinitis (SAR) and asthma risks, including thunderstorm asthma. Patients in this high-risk population are frequently poly-sensitized to subtropical grass pollen. Whether this affects their response to temperate grass pollen allergen immunotherapy (AIT) is unknown.
- This study establishes that 5-grass pollen SLIT is effective in SAR patients with temperate grass (ryegrass) pollen allergy, irrespective of their poly-sensitization status to subtropical grass pollen.

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