

Existing skin barrier measures used in research is **unreliable** in distinguishing **age-associated** skin barrier decline

Exploring measures of age-associated skin barrier decline

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BACKGROUND

Though the skin barrier has been associated with systemic inflammation and related disease processes,¹⁻² prior research suggests variability of measures in evaluating age associated skin barrier decline.³ Here, we sought to explore this deficit.

METHODS

1. Young (ages 20-40) and old (ages≥65) healthy participants with no history of skin disease or recent immunosuppression were recruited
2. Demographic information, skin barrier measures, and blood for inflammatory markers were collected
3. 2 sample t-test was used to compare differences in barrier measures

RESULTS

Table 1. Differences in skin barrier measures between young and old participants

		SCH	pH	TEWL	AUC
wrist	Young	54.9*	6.3	12.2	274.6
	Old	35.1*	5.7	15.1	289.0
buttocks	Young	42.4	6.3	8.0	200.1
	Old	47.0	6.3	13.9	249.3

DISCUSSION

Here we demonstrate that existing skin barrier measures are not sensitive in distinguishing young, healthy skin from aged, older counterparts. Future directions include exploration of other barrier measures such as electrical impedance spectroscopy.

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Table 2. Demographic distribution of study participants

Demographics	All (n = 26)	Young (n=16)	Old (n=10)
Age, (y, SD)	46 (26)	26 (3)	78 (7)
Range (y-y)		23 - 34	69 - 88
Sex (n, %)			
Male	14 (54%)	5 (31%)	9 (90%)
Ethnicity (n, %)			
Hispanic	3 (12%)	3 (19%)	0 (0%)
Race (n, %)			
White	20 (77%)	11 (69%)	9 (90%)
Asian	6 (23%)	5 (31%)	1 (10%)
Fitzpatrick (n, %)			
I - III	10 (38%)	5 (31%)	5 (50%)
IV - VI	16 (62%)	11 (69%)	5 (50%)

Table 3. Skin barrier measures

Barrier measures	Description
SCH (a.u.)	Stratum corneum hydration
pH	Skin pH
TEWL (g/m ² /h)	Transepidermal water loss
AUC	Area under the curve when plotting tape strips to TEWL

• (*) asterisk denotes significant difference of skin barrier measure between young and old groups



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