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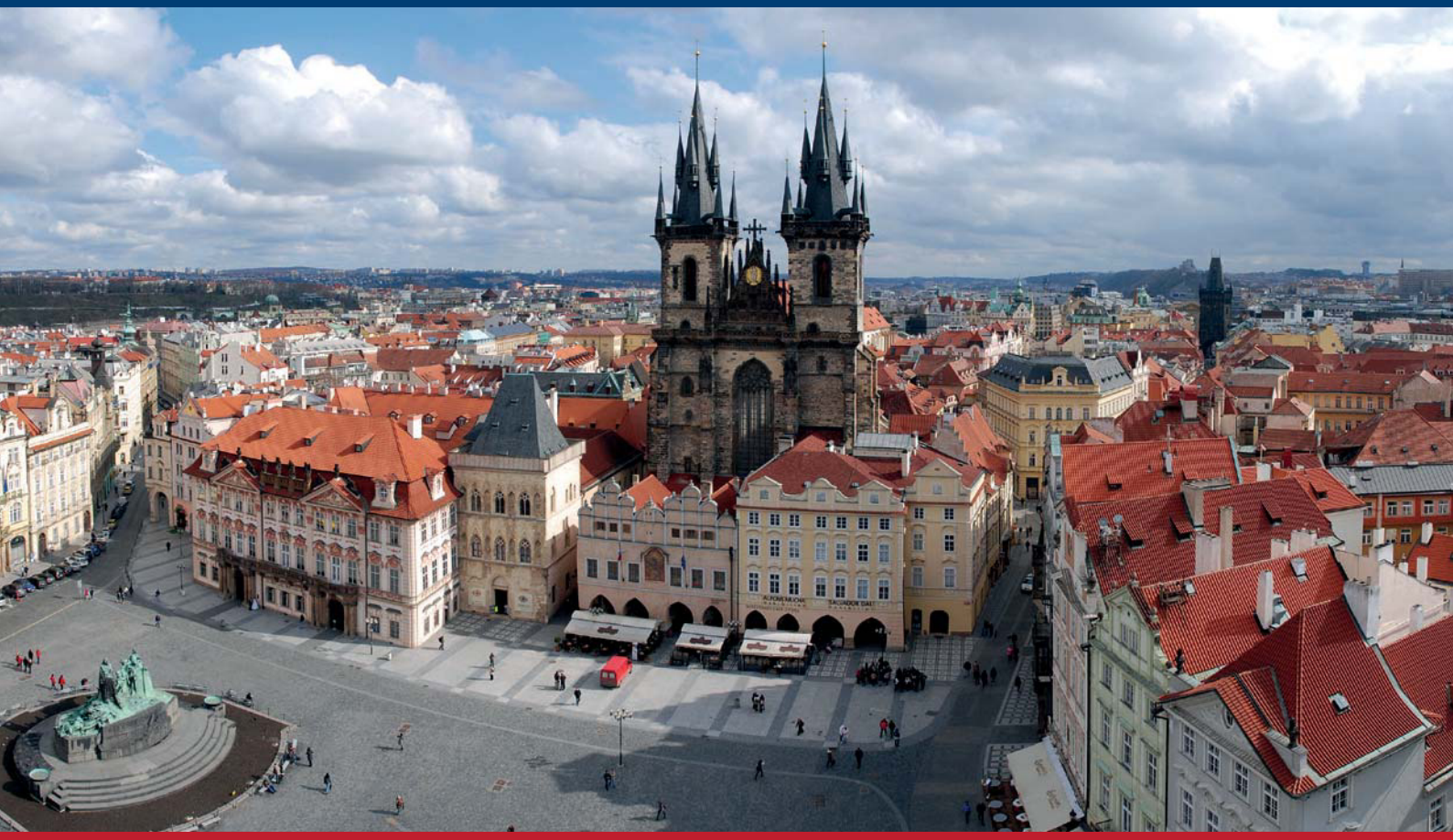

ABSTRACT BOOK

Partnerships: Masaryk University, Faculty of Medicine, Brno; Institute of Health Information and Statistics; Czech Wound Management Association; Ministry of Health of the Czech Republic

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MINISTERSTVO ZDRAVOTNICTVÍ ČESKÉ REPUBLIKY

10.1

Properties of corneocytes in the context of skin health

Ana Evora[1], *Nkemjika Abiakam*[2], *Shabira Abbas*[3], *Simon Johnson*[1], *Peter Worsley*[2], *Michael J. Adams*[1], *Dan Bader*[2]

1 *University of Birmingham, School of Chemical Engineering, Birmingham, United Kingdom*
2 *University of Southampton, Southampton, United Kingdom*
3 *Essity AB, Stockholm, Sweden*

Introduction: The integrity of the skin can be challenged by constant high normal and shear stresses, which may lead to skin damage in the form of pressure ulcers [1]. Most studies have focused on measures of biophysical markers [2] to assess skin health, overlooking the potential role of corneocytes in maintaining the integrity of the Stratum Corneum (SC). Indeed, these dead cells undergo an active maturation process, which includes the loss of corneodesmosomes and the stiffening of the cornified envelope (CE) [3]. This study was designed to evaluate the role of corneocytes in skin health.

Methods: A series of parallel studies have been conducted including the examination of skin response following the prolonged use of respiratory devices and exposure to pressure and moisture on two separate healthy cohorts. Corneocytes were collected via tape stripping from specific anatomical locations following each challenge. The ranked sum of the number of immature CEs (INV+) and the amount of desmoglein-1 (Dsg1) were evaluated using immunostaining techniques and correlated with the biophysical markers of skin health i.e., TEWL and SC hydration.

Results: Results revealed that the disruption of the barrier function following prolonged skin exposure to mechanical loads and moisture, as previously evidenced by increased TEWL and SC hydration [2], was correlated with both a relatively lower number of immature CEs and lower levels of Dsg1 (Fig. 1).

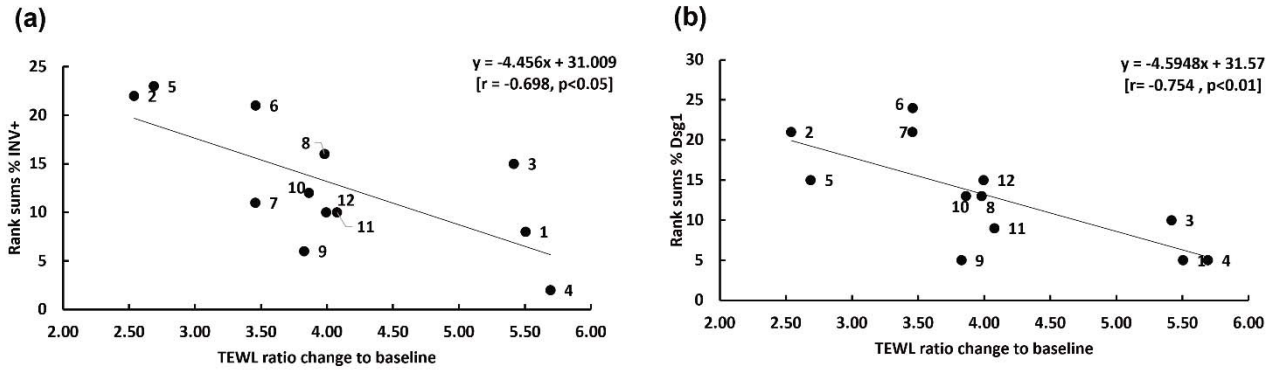

Figure 1. Relationship between the rank-sum of the percentages of (a) INV+ cells and (b) Dsg1 and the TEWL response at the sacrum after exposure to synthetic urine and loading for a total of 120 min.

Conclusions: High level of immature CEs and Dsg1 appear to provide the SC with enhanced protection against challenges from mechanical loading and moisture. This might be a direct result of these superficial cells providing a more cohesive, less easy to detach layer. However, additional evidence is required to correlate the properties of corneocytes with subject specific response to insults.

References:

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[3] *Évora AS, Adams MJ, Johnson SA, Zhang Z. Skin Pharmacol Physiol. 2021;34(3):146-161.*