

FS-33 | Metals with Known Sensitizing Potential as Ingredients in Oral Care Products

Wolowiec W¹, Spiewak R²

¹Cosmetology Graduate, Jagiellonian University Medical College,

²Institute of Dermatology, Kraków, Poland

Purpose: Repeated use of oral care products may create conditions conducive to the development of contact allergy. Toothpaste ingredient lists include various metal compounds that have been reported to cause allergic reactions. Oral exposure to metals could result in local allergic reactions, e.g., cheilitis or stomatitis, they also could provoke systemic reactivation of ACD. Nevertheless, tolerogenic effects of oral exposure also are possible. Depending on the compound, the bioavailability of particular metal, e.g., releasing free ions via dissociation or metabolic decomposition, may greatly vary which may determine the response. The aim of this study was to create an inventory of these metal compounds.

Methods: Photos were taken of the ingredients listed on the packaging of products available in stores in Krakow between 15 and 27 January 2026. The photos were scanned, and the ingredients were compiled and analysed.

Results: Altogether 75 toothpastes and 45 mouthwashes were identified, 87% of international and 13% of domestic brands. Various compounds of metals with known sensitizing potential declared in the toothpastes included compounds of copper (19 toothpastes), titanium (10), tin (7), zinc (7), aluminum (6), iron (3) and strontium (2). Copper occurred as an adduct of insoluble pigments copper phthalocyanine (CI 74160; 13) and phthalocyanine green G (CI 74260; 6), titanium as dioxide (CI 77891; 10), tin as soluble stannous fluoride (6) and insoluble tin oxide (CI 77861; 1), zinc as gluconate (4), citrate (2) and chloride (1), aluminum as lactate (5) and silicate (1), iron as oxides CI 77491, CI 77492, CI 77499 (1 each), whereas strontium as soluble acetate (2). The metal compounds of interest were not listed in 42 (56.0%) toothpastes and 43 (95.6%) mouthwashes. Zinc citrate and zinc sulfate were each present in one mouthwash.

Conclusions: Compounds of potentially sensitizing metals are frequent in toothpastes but not in mouthwashes.

FS-34 | Distinct Inflammatory Patterns of Acute Contact Dermatitis to Metal and Non-Metal Allergens in Atopic Patients with and without Atopic Dermatitis

Schmid M¹, Cazzaniga S¹, Oberson K², Simon D¹, Radonjic-Hoesli S^{1,3,4}

¹Department of Dermatology, Inselspital, University Hospital Bern, ²Institute of Pharmacology, University of Bern, ³Department of Clinical Research, University Hospital Basel and University of Basel, ⁴Department of Clinical Research, University Hospital Basel and University of Basel, Switzerland

Background: Differences in inflammatory patterns of acute contact dermatitis (ACD) in patients with atopic dermatitis (AD) and non-atopics (NA) as well as to metal and non-metal allergens have been reported previously. In the clinical routine, patients with atopy without AD (Aw/oAD) represent a large

patient cohort. The inflammatory pattern of ACD in these patients has not been addressed so far.

Purpose: Characterization of the inflammatory patterns of ACD in Aw/oAD to metal and non-metal allergens in comparison to AD and NA patients.

Method: Tape strips of ++/+++ positive patch test reactions to metal and non-metal allergens at 72h were collected in Aw/oAD ($n = 4$ each), AD ($n = 3$ each) and NA ($n = 3$ each) patients. To determine preexisting inflammation, tape strips of non-lesional skin (NLS) were collected ($n = 3$ in each group). The OLINK inflammatory panel was used for proteomic profiling.

Results: Overall, a small number of inflammatory proteins, incl. CCL3 and IL-8, were upregulated upon metal and non-metal allergen challenge in all groups. Comparison of normalized protein expression of ACD to metal and non-metal allergens showed a significantly stronger and broader protein expression to non-metal allergens in AD, whereas no difference was observed in NA patients. Patients with Aw/oAD demonstrated a distinct protein expression pattern, with significantly stronger upregulation of CCL4 and DNER to non-metal allergens. The analysis of the relative change of protein expression in ACD compared to NLS revealed again different patterns of protein upregulation to metal and non-metal allergens among the three groups.

Discussion: As of our knowledge, this is the first report addressing inflammatory patterns of ACD in patients with Aw/oAD. Our data emphasize, that these patients show a distinct inflammatory pattern of ACD compared to AD and NA patients. In summary, our findings reflect the effects of underlying barrier defects and immune responses on ACD.

FS-35 | Allergic Contact Dermatitis from Metals: A Retrospective Cohort Study at a Tertiary Dermatoallergy Clinic in Turkey (1996–2021)

Günay M^{1,2}, Özkaya E¹

¹Istanbul University, Istanbul Faculty of Medicine, Turkey

²Danderyds Sjukhus, Sweden

Background: Metal-induced allergic contact dermatitis (ACD) is a major cause of contact allergy. While several European countries reduced sensitization through early regulations, long-term data from Turkey remain scarce.

Purpose: To determine the prevalence and relevance of sensitization to baseline series metals (nickel sulfate 5% pet., cobalt chloride 1% pet. potassium dichromate 0.5% pet., and palladium chloride 1%–2% pet.), compare occupational vs. non-occupational sources, and describe demographic and clinical features of metal-induced ACD.

Methods: We retrospectively analyzed records of 2932 patients patch-tested with at least one metal allergen (1996–2021). Clinical relevance was evaluated via the COADDEX system, and exposure sources classified as occupational or non-occupational.

Results: Metal sensitization occurred in 28.4% of patients—most commonly to nickel (21.1%), followed by chromium (8.9%), palladium (8.9%), and cobalt (7.1%). ACD was diagnosed in 39.2% (326/832) of sensitized individuals.

Non-occupational sources comprised 52.5% (171/326) of ACD, mainly due to nickel (146/171, 85.4%), followed by palladium (59/171, 34.5%) from jewelry, clothing fasteners, and nickel-rich foods; systemic reactions occurred in 19.3% (33/171).