Akademie für Integrative Medizin,
Zahnmedizin und Bewusstseinstechniken

<u>Beispiel:</u> Metall-Ionen induzierte toxische Histamin Freisetzung von menschlichen Basophilen und Mast-Zellen.

Metal ion-induced toxic histamine release from human basophils and mast cells. J Biomed Mater Res 1998 Mar 15;39(4):560-7 (ISSN: 0021-9304) Schedle A; Samorapoompichit P; Fureder W; Rausch-Fan XH; Franz A; Sperr WR; Sperr W; Slavicek R; Simak S; Klepetko W; Ellinger A; Ghannadan M; Baghestanian M; Valent P. School of Dentistry, University of Vienna, Austria.

<u>Abstract:</u> Recent data suggest that distinct metal ions can be released from dental alloys or other biomaterials, and may cause **toxic** effects on various cells. In this study, the effects of 14 metal ions on histamine release from human blood basophils (n = 4), isolated tissue mast cells (lung n = 8, uterus n = 2, skin n = 1, gingiva n = 1), the basophil cell line KU-812, and the mast cell line HMC-1 were analyzed. Of the 14 metal ions, Ag+ (0.33 mM) and Hg2+ (0.33 mM) were found to induce release of histamine in blood basophils, KU-812, mast cells, and HMC-1. The effects of Ag+ and Hg2+ were dose dependent and were observed within 60 min of incubation. In primary mast cells and basophils, AU3+ (0.33 mM) also induced histamine release, whereas no effects of Au3+ on HMC-1 or KU-812 cells were seen. The other metal ions showed no effects on primary or immortal cells within 60 min. However, Pt4+ (0.33 mM) induced histamine liberation in HMC-1 and lung mast cells after 12 h. The Ag+- and Hg2+-induced rapid release of histamine from HMC-1 was associated with ultrastructural signs of necrosis, but not apoptosis. In contrast, prolonged exposure to Pt4+ (0.33 mM, 14 h) induced apoptotic cell death in HMC-1 cells, as assessed by electron microscopy and DNA analysis. Together, certain metal ions induce distinct cytopathogenic effects in mast cells and basophils. Whereas Ag+, Hg2+, and Au3+ cause direct **toxicity**, Pt4 causes cell death through induction of apoptosis. Whether such effects contribute to local adverse reactions to metal-containing biomaterials in vivo remains to be determined.

<u>Zusammenfassende Übersetzung der Ergebnisse:</u>
Metall-Ionen aus zahnärztlichen Werkstoffen setzen in menschlichen Blutzellen Histamin frei, bei Silber- und Quecksilber-Ionen bereits nach 60 Minuten. Bei Platin-Ionen trat dieser Effekt erst nach 12 Stunden ein. Die Freisetzung von Histamin war bei den Blutzellen verbunden mit Veränderungen der Ultrastrukturen und bei längerer Einwirkung (Platin-Ionen nach 14 Stunden) mit Zelltod. Silber-, Quecksilber- und Gold-Ionen lösen direkte Toxizität aus, Platin-Ionen verursachen Zelltod durch Auflösung der Zelle.

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