Gold has long been regarded as a controversial contact allergy (1). In order to induce or elicit contact allergy metals must be in an ionized state. For some metals spot analyses are available that can easily provide evidence of ionization (2–4), but for many metals, e.g. more precious ones, these do not exist.

There is a directive that regulates the use of nickel in items to be in contact with the skin, thus minimizing the risk of contact allergy. The release of nickel ions is based on findings when using artificial sweat (5, 6). For legislative purposes it would, of course, be very easy and logical if the analysis used for one metal could be used for all. For some metals, however, especially with regard to where/how they are used, this may not be possible. Artificial sweat has been tested for gold release, but has not yielded any positive results, i.e. no gold was detectable (7, 8).

The aim of the present study was to investigate gold release from various gold samples under different conditions.

MATERIALS AND METHODS

Artificial sweat, solutions of 0.1 M cysteine, 0.1 M glutathione, 0.1 M penicillamine, 0.5 M nitric acid, 0.1 mM sodium hydroxide, 1% lactic acid, and 1% cysteine were used. For details, see Appendix S1 (available from: http://www.medicaljournals.se/acta/content/?doi=10.2340/00015555-1541).

In the pilot study, extractions of gold-plated earrings in different solutions were performed. Extracts were analysed on days 4 and 5. For details, see Appendix S2 (available from: http://www.medicaljournals.se/acta/content/?doi=10.2340/00015555-1541).

Table I. Pilot study, gold release from gold-plated titanium earrings. Ear-rings (surface area 0.77 cm²) were extracted in 5 ml of each solution. The extraction solutions were analysed using atomic absorption spectrometry. Detection limit < 0.003 µg/ml.
The results of this study confirm that discussion of the surrounding tissue/body fluid where an implant is located is of the utmost importance, since the body fluids and tissue will make the implant react differently. The results emphasize the importance of taking corrosion and a possible contact allergy into consideration when choosing implant material.

REFERENCES