GABA International

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Damage to health caused by dental materials in the mouth?

For some years now so-called composite resins are increasingly being used in the oral cavity e.g. as filling materials in front and posterior teeth. These are classic resins which contain approx. 80% inorganic filler particles to improve their properties, hence the term: composite. In general, composite resins are well tolerated. However, side effects occur in isolated cases in patients, particularly among dental personnel, e.g. as allergies with swelling of the skin and mucous membranes, reddening and itching. Even if, at less than 0.1 % (in patients) and 2-3% (in dental personnel), the incidence of side effects is lower than for example in the use of cosmetics (over 10 %), efforts are nevertheless being made to further minimise the risks in individual cases by altering the composition of these materials.

What are the causes? First of all the individual components of the resin which are responsible for biological reactions have to be identified. These are mostly "small" molecules which are added to the resin to make it more malleable and thus workable and to bond it securely to the dental substance. However, these small molecules are washed out of the material, partly because they are slightly soluble in water.

How do these compounds act on the body? New data on this topic will be presented at this conference. Test tube experiments have shown that these molecules can evidently penetrate into the cells and thereby (even in very low concentrations) affect cellular metabolism and DNA (genetic material). This locally-occurring damage (e.g. in the dental pulp ("nerve") is usually repaired by the cells, or damaged cells are replaced by healthy ones in a physiological process. The concentration of these "small" molecules in the organism as a whole is probably far lower than those which are active locally and in the test tube. In addition, these substances are rapidly degraded in the organism, and the degradation products are largely eliminated via the breath.

How can the (low) risk of side effects in composite resins now be further reduced? Can these "small" molecules be replaced by other substances which are less soluble in water? This question will be addressed by new data about new composite resins which will also be presented at this conference. The water solubility of these new resin components is in fact lower, and some of the previously typical reactions on the inside of the cell (e.g. DNA change) have not been found to date. This means that new materials are available which – we are justified in hoping - can also be used in patients with proven allergies against the

"small" molecules mentioned earlier. However, substances are also released from the "new" composite resins. Therefore clinical studies will have to show in future whether and to what extent the side effects really can be reduced in everyday practice.

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