**Artificial Sweeteners in Drinking and Mineral Water of Baden-Württemberg**

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Artificial sweeteners are an important class of sugar substitutes widely added to foods, personal care products and pharmaceutical formulations.

Important sweeteners are: saccharin, cyclamate, aspartame, sucralose, acesulfame, neohesperidin and neotame.

Some of these substances are not extensively adsorbed and metabolized in humans, resulting in the majority being excreted without transformation into wastewater. In sewage plants some artificial sweeteners are not removed. Because of their high solubility in water it is not expected that they are extensively adsorbed to organic solids in the environment. Their way to the ressources of drinking water is definitely marked in the chain „Food - Humans - wastewater – wastewater treatment – surface water – groundwater –drinking water“.

Especially acesulfame along with saccharin, cyclamate and sucralose were found to be somewhat persistent in water and the environment (Scheurer et al 2009). It will likely be proposed as an indicator compound for domestic wastewater influence on other water types as ground and surface water.

For the determination of artificial sweeteners in the low nanogram-per-liter-range a fast method without enrichment and with direct injection of the water samples was developped for HPLC-tandem mass spectrometry (HPLC-MS/MS).

Artificial sweeteners are contaminants in drinking water and contradict – even if they are not harmful –the principle of a pure drinking water layed down in DIN 2000 and the ALARA-principle of contaminants - „As Low As Reasonably Achievable“.

In the last years more than 600 samples of drinking water were investigated for acesulfame, cyclamate, saccharin and sucralose. The most detected sweetener was acesulfame.The results of routine analysis and monitoring samples will be given.

Another situation in the legal sense was given from the german Mineral- und Tafelwasser regulation (MTV 2006). Natural mineral water is defined as a water from a reservoir that is secured protected against contamination with pollutants. The water is of natural purity.

Verified detections of an artifical sweetener in natural mineral water could be taken as an analytical proof of the anthropogenic influence to the water reservoir used for the production of mineral water. That could mean that this water reservoir is possibly not sufficiently protected against contamination. Therefore the official Food Control came to the conclusion that the natural purity of this mineral water could be certified no longer.

In the last years more than 350 samples of bottled products of mineral water as well as water samples taken directly from the fountain were investigated.

Most of the samples were free of artificial sweeteners, but in a certain number of mineral water samples at least one artificial sweetener could be detected. In some samples more than one sweetener was found. The results and the judgment will be given.

Scheurer et al 2009: Scheurer, M.; Brauch, H.-J.; Lange, F. T.: Anal. Bioanal.Chem. 394 (6), S. 1585-1594.

DIN 2000: „Zentrale Trinkwasserversorgung – Leitsätze für die Anforderungen an Trinkwasser, Planung, Bau, Betrieb und Instandhaltung der Versorgungsanlagen“, (Stand 10/2000).

MTV 2006: Mineral- und Tafelwasser-Verordnung (MTV) in der Fassung vom 01.12.2006 (BGBl. I S. 1036).