

## INHIBITORY ENZYMATIC ACTIVITY OF SEMICARBAZIDE

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Azodicarbonamide is a plastic additive that was used in the gaskets that seal the jar lids of a range of products. When these products were heated to ensure a tight seal, semicarbazide (SEM) was released. Considering that infants are fed aliments in glass jars, the EU prohibited azodicarbonamide as foaming agent from August 2005, while the EFSA called for toxicological data on SEM. However, SEM is still found in azodicarbonamide-treated baking flours.

Aim of our work was to evaluate the potential endocrine disrupting activity of SEM using a number of in vitro assays.

In our conditions, SEM was neither able to activate the human estrogen receptor  $\alpha$  transfected in yeast nor to induce estrogenic effects on MCF-7 and Ishikawa cells. Instead, SEM seemed to act as a non-specific enzymatic inhibitor. In fact, SEM inhibited both  $\beta$ -galactosidase and alkaline phosphatase, endpoint enzymes in the yeast estrogenicity assay and in Ishikawa cell assay, respectively. Other enzymes could possibly be involved in growth inhibition of MCF-7 cells.

SEM-sensitive amine oxidase is a group of enzymes involved in the oxidative deamination of various endogenous and xenobiotic amines in mammalian tissues. The highly sensitive inhibition of this group of enzymes by SEM is well known. Our in vitro findings suggesting that SEM could interfere with several different enzymatic systems, call for further investigations to evaluate possible toxicological effects of this compound.