

# Microbiological Quality Management for the Production of Cosmetics and Toiletries

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## Introduction

Most cosmetics and toiletries contain water and a lot of ingredients are good nutrients for microorganisms. The demand to use compounds, which are readily biodegradable leads to improved growth conditions in modern formulations. Cosmetic production is not a sterile process and at least the storage temperature is nearly optimal for microbial growth. All factors for microbial attack (Figure 1) are fulfilled.

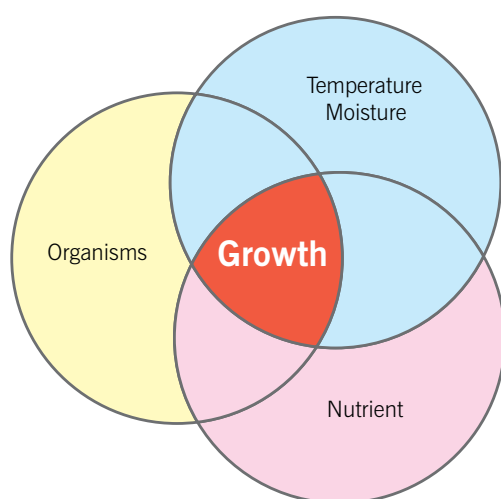


Figure 1. Basic conditions for microbial growth

To produce microbiologically faultless cosmetics and toiletries an integrated microbiological quality management is necessary, consisting of good raw material quality, good production hygiene and a validated preservative system. The influence of the non-woven, the production process, the choice of preservatives, preservative efficacy testing, responsible care and hygiene measures have also to be taken into consideration.

The Guidelines for Good Manufacturing Practice of Cosmetic Products (GMPC) from the Council of Europe are recommendations for the guidance of cosmetic manufacturers. The microbiological quality management (MQM) is a part of GMPC.

## 2. The need of preservation

Microorganisms can grow on almost every substance existing in nature and are often able to attack or even decompose them.

The biological degradation has to be stopped for a certain period. A preservative must be added, but for environmental reasons the preservative should be biodegradable, too. This is no conflict; for example at a concentration of ethanol between 50 and 90 % it is a good disinfectant, between 13 and 50 % it acts as preservative, but below 13 % ethanol will be biologically degraded to acetic acid (Figure 2).

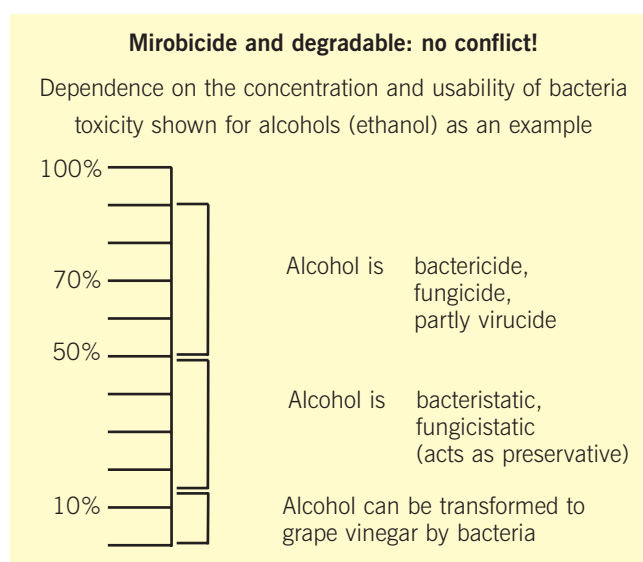


Figure 2. Microbial degradation of ethanol

## 3. The choice of preservatives

To select a preservative we have first to follow the legal demands. Not all actives are permitted in all markets like Europe, USA or Japan. Some actives are not permitted for baby products or contact with mucous membranes. Critical applications like wet toilet paper need special attention. Of course the preservative must be effective in the formulation. Incompatibilities with other ingredients of the formulations have to be avoided to guarantee the efficacy of the preservative over the whole shelf life of the product. Often marketing aspects like "free" of halogenated compounds, not animal tested or no negative assessment in test magazines will influence the decision for a preservative system.