

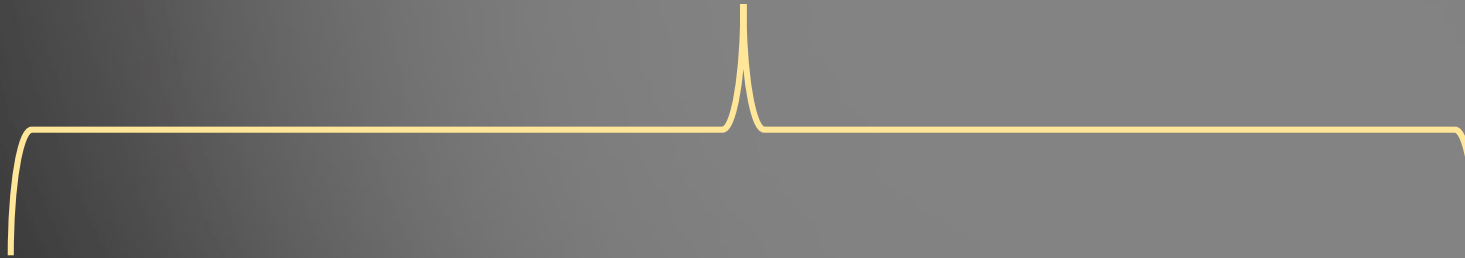
WHY ANTIMICROBIAL MATERIALS ARE USED IN FLOUR MILLS



FOOD SAFETY



Farming → Food industry → Retail → Consumers



Raw material

Transformation

Packaging



FOOD SAFETY – Raw material



Sources

Cultivation practices

Environment

Animals

Contaminations

Physical

Chemical

Biological

Remedies

Separation

Cleaning: scouring
brushing
debranning

Sterilization



FOOD SAFETY – Transformation



Sources

Raw material

Cross-contaminations

Surfaces

Contaminations

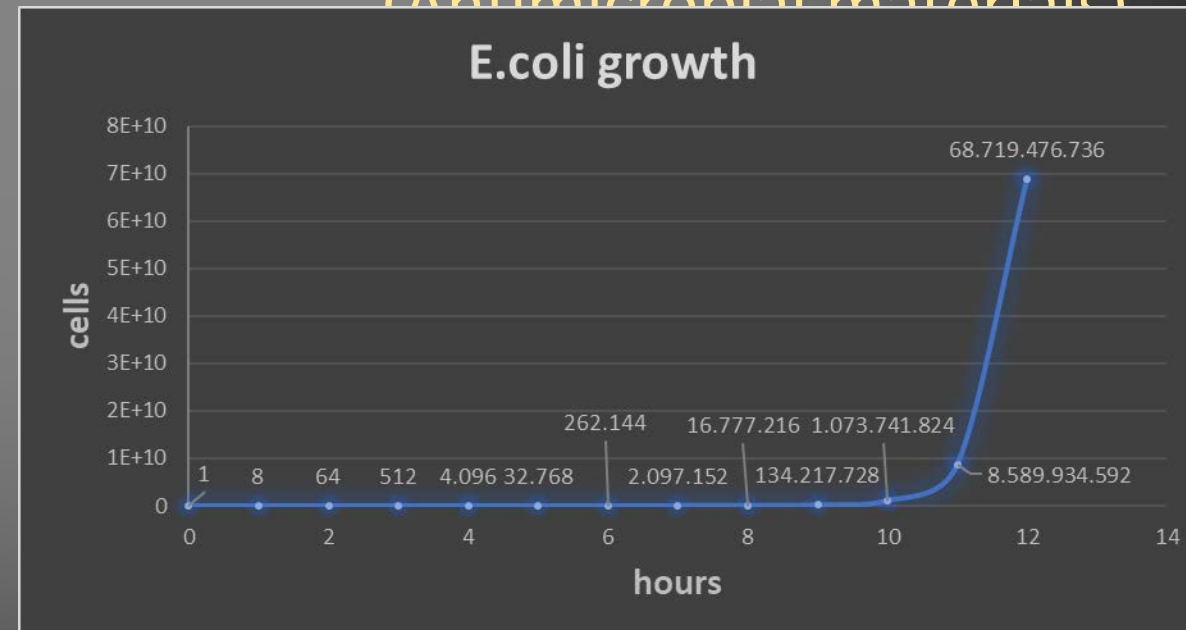
Chemical

Biological

Remedies

Cleaning the machines

Avoid micro-environments
(Antimicrobial materials)



FOOD SAFETY – Packaging



Sources

Cross-contaminations

Surfaces

Contaminations

Chemical

Biological

Remedies



Cleaning the machines

Antimicrobial surfaces
(machines and packaging)



Antimicrobial surfaces are one of the solutions to food hygiene

Two categories of antimicrobial surfaces:

- Coatings  Abrasion - Larger areas
- Incorporation  The action will remain for the lifetime of the product - Size limitation



MAIN ANTIMICROBIAL IN FOOD INDUSTRY



Organic biocides

Cationic biocides

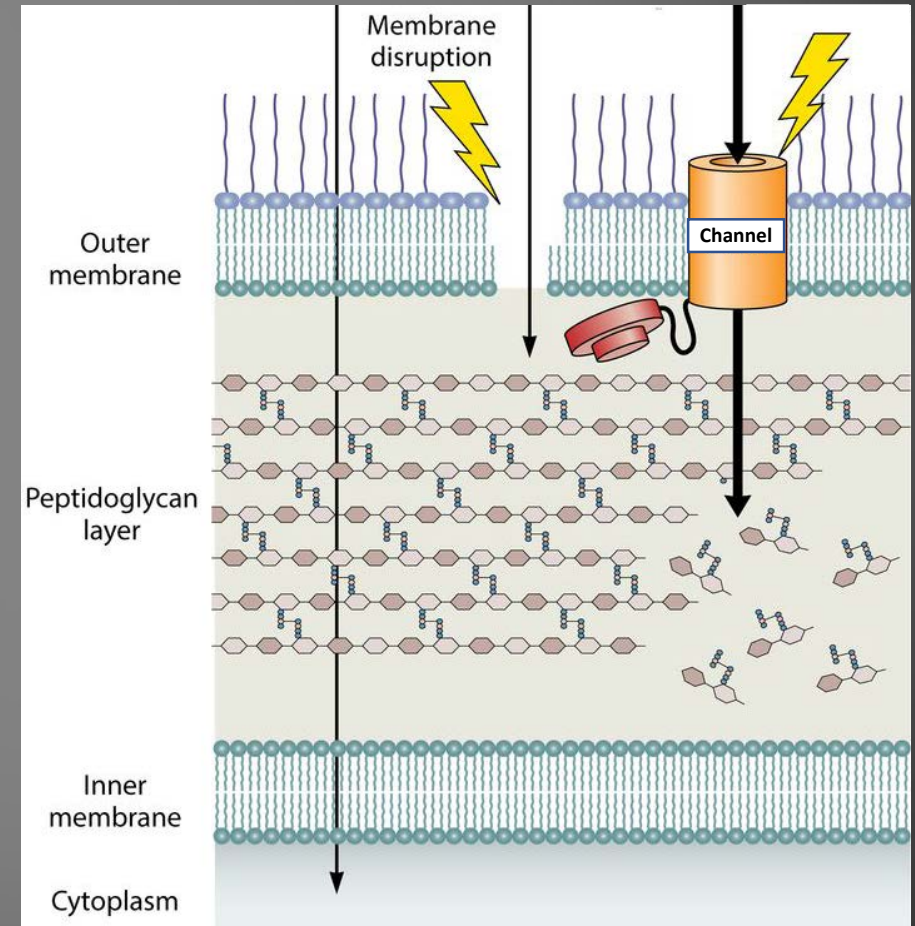
Ions: silver, copper,
gold



MECHANISMS OF ACTION: Cationic biocides

Low toxicity

Interact with cell envelope resulting in membrane disruption



Modified from: Samuel I. Miller mBio 2016

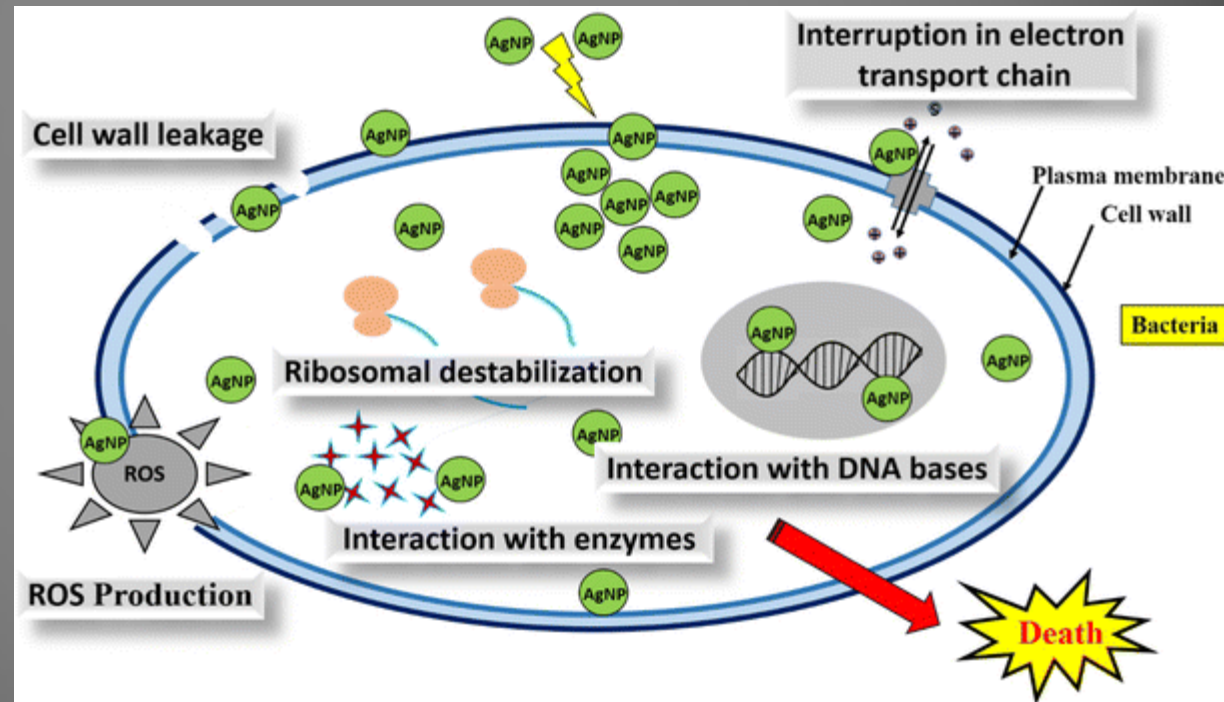


MECHANISMS OF ACTION: Silver ions

Silver has been used for his antimicrobial actions since the Romans

Biostatic effect

Biocidal effect



Patil, M.P. & Kim, GD. Appl Microbiol Biotechnol (2017)

OCRIM RESEARCH AND APPLICATIONS



INOX-LINE: Stainless Steel machines



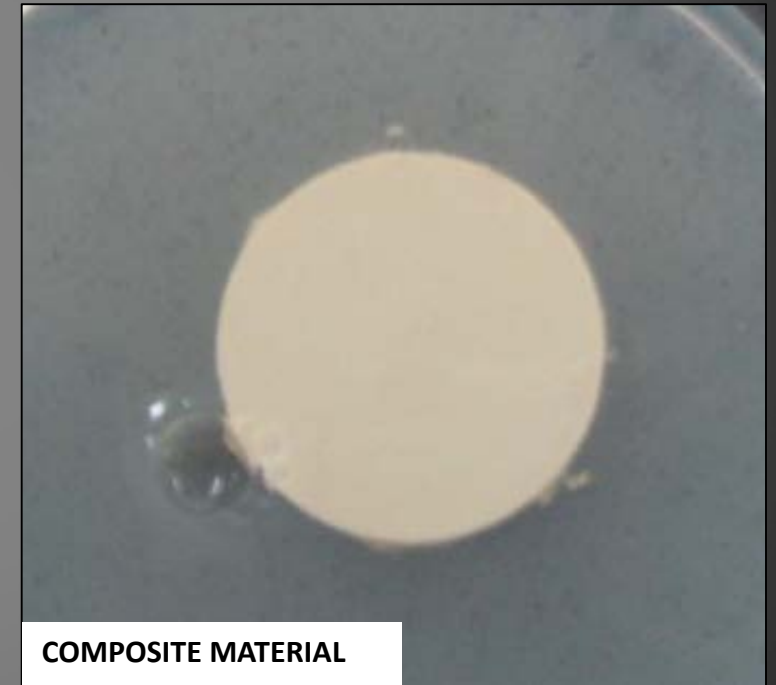
Rollermill RMX



Purifier SDX



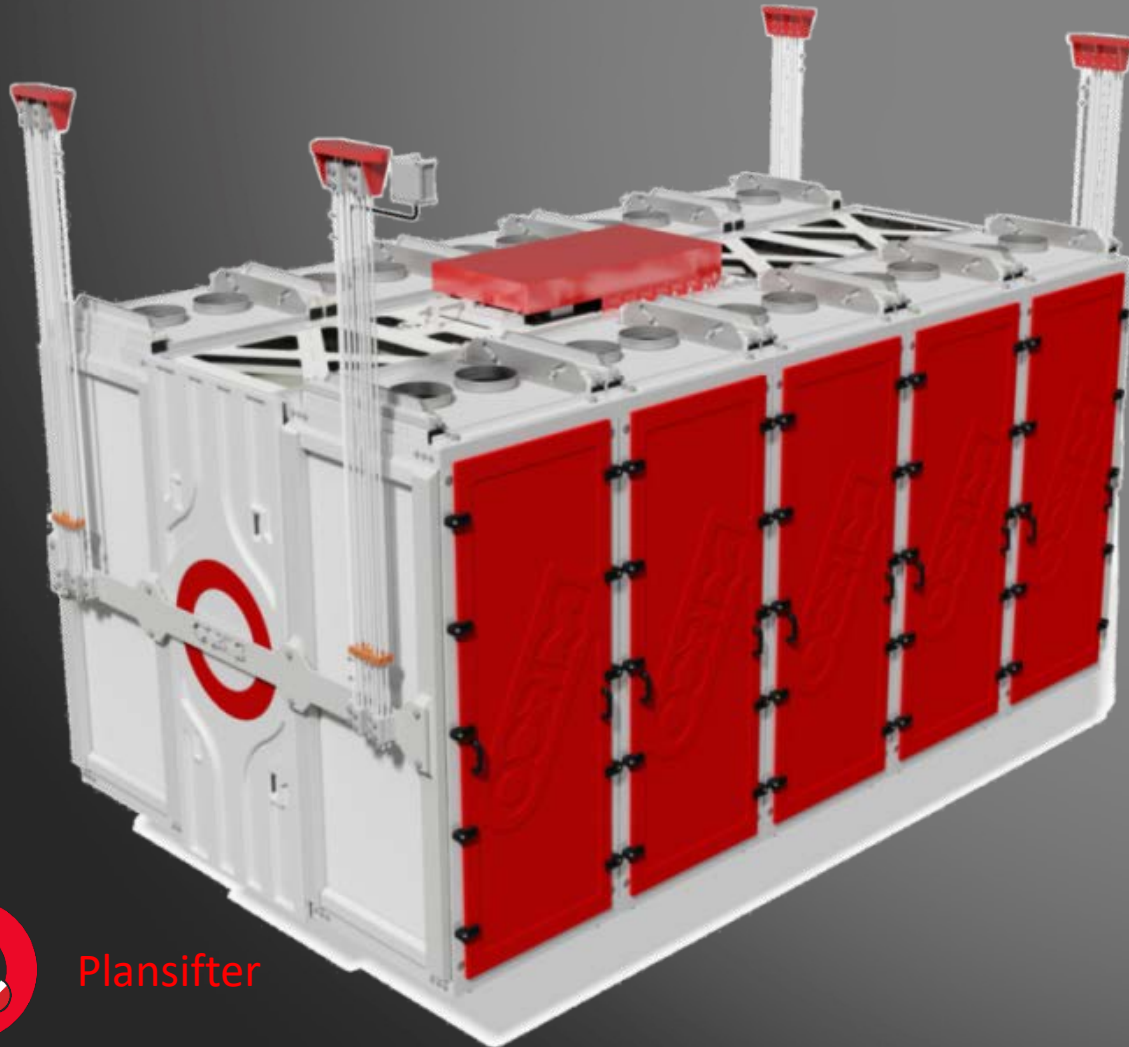
ANTIMICROBIAL COMPOSITE MATERIAL



OCRIM RESEARCH AND APPLICATIONS



ANTIMICROBIAL SIEVES



Plansifter

Why Antimicrobial Materials are used in Flour Mills ?

- They are one of the approach used in other food industries to implement the sanitation
- They prevent the growth of microorganisms, therefore they reduce the cross-contamination effects

