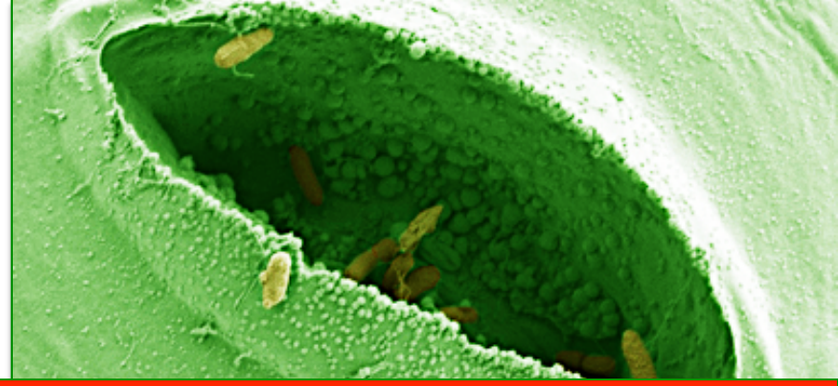
KNAMAX™

Produce Decontamination
Food Safety
Consumer Protection

Salmonella and other bacteria Inactivation on produce surface

Salmonella is responsible for +1.9 million illness and +700 deaths within the U.S. only, and therefore a major concern of public health. In recent years a number of recalls appeared in the news.

The Effect of spraying vegetables and fresh produce from agriculture with KNAMAX™ was studied under specific circumstances including inoculation with Nalidixic acid-resistant bacterial culture. Test were conducted both at room temperature and under refrigeration control.



- Chlorine Free*
- Up to 99,9% Pathogen Kill
- TBC/APC Reduction
- High Purity Natural Ingredients
- Reduce Safety Recalls
- No Special Devices/Simple Use
- No Residues/By-products
- No pH Changes/No Colour Impact

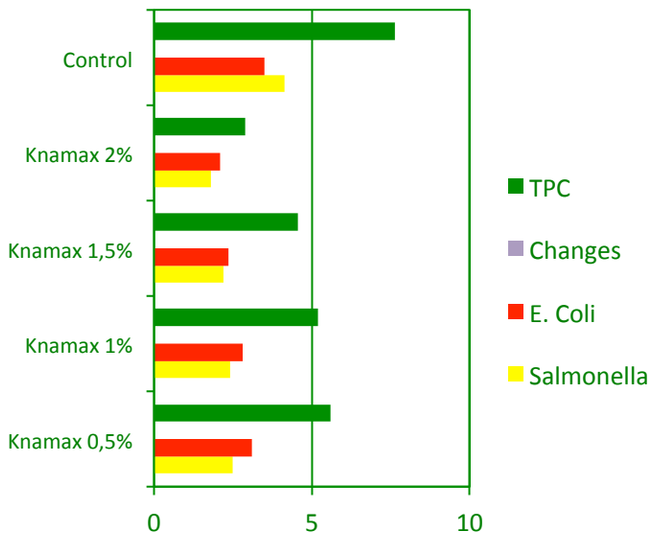
Industry and Consumers demand safe products. Microbiological control is a major concern worldwide as produce surface is susceptible of contamination from different sources and microorganisms. KNAMAX™ is a 100% Natural Mineral Salts and Substances Composition providing a treatment solution for producers and industry adding extra protection within the processing line and up-standard quality to produce safer and better fresh vegetable products at all.

Knamax™

100% Mineral Solution for Food Safety

Knamax™ Study Control 2015

INACTIVATION OF ENTEROBACTERIA FROM SURFACE OF PRODUCE AND VEGETABLES AFTER SPRYING WITH A FOOD-GRADE LOW-COST SANITIZER (KNAMAXTM). Printed Matter



*According EU Standards and most recent research, chlorine-processed produce is being related with the possible formation of surface carcinogen substances and other by-products after reaction with organic material present on surface that may impact on human health. KNAMAX™ composition ingredients are Food-Grade Certified Mineral Salts and Substances from natural origin included within the Annex II of Regulation EC 1925/2006. Used as in such technological function, labelling is not mandatory in accordance with the Regulation EC 1169/2011.

KNAMAX™ is a concentrated product. Thus far 1L of KNAMAX™ (at an average dose of 2%) may let producers to form 50 litres of final product (ready-to-use). Performance calculated on average percentile basis for regular industry wash/spray.

Outer leafs of lettuce were discarded and sterile scissors were used for preparation of each pieces of inner leafs. Solution of KNAMAX™ were prepared with product mixed with distilled water. The solutions tested appeared to be promising sanitizers in the food industry. 1´5 % and 2% of KNAMAX™ in distilled and/or purified water.

Solutions seem to be particularly effective against *Salmonella* and in a biofilm, and neither of the tested concentrations of either type of KNAMAX™ caused a sensory quality change of the romaine lettuce when rinsed off before consumption, according to the instrumental measurements of colour and the overall difference test completed by the sensory panel.

When used at room temperature they are both a better choice than the conventionally used 150 ppm chlorine bleach, and when used at refrigerated temperature KNAMAX™ is a better choice than bleach, which is quickly inactivated by the organic matter in the biofilm and was shown to be no more effective at killing *Salmonella* in the tested conditions than distilled water.

As a major advantages of KNAMAX™ Solution are:

- High penetration of leaf/produce hydrophobic cuticle
- No inactivation due to reaction with organic material on surface and/or biofilm
- Disruption of cell wall membrane by certain toxics resulting in cell death.
- Most effective than 150ppm Chlorine bleach and/or Control Groups.
- Cost-Effective (1 L of KNAMAX™ may rise up to 50 L of final product for Spray).