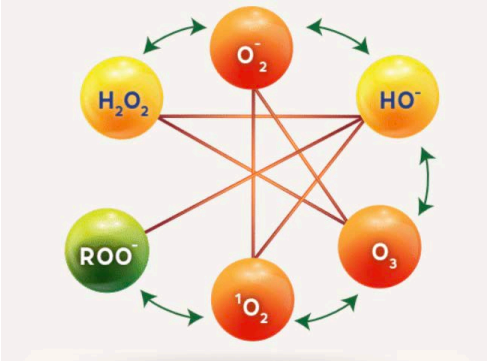
AGRICULTURE SOLUTIONS OVERVIEW • JC-9465 MINERAL OXYCHLORIDE

A Game Changer for the Agriculture Industry

Reactive Oxygen Species (ROS) engineered to improve profits and safety in agriculture

JC-9465 is a new proprietary advanced chemistry that generates ROS (Reactive Oxygen Species). It is an aqueous chelation of minerals/metals and oxychloride compounds in a liquid form. Our mineral oxychloride technology is a source of oxygen energy that is effective against **99.9999% of bacteria and viruses**.

By generating a high concentration of hydroxyl radical ions and other oxygen species, JC-9465 has been proven to kill microorganisms in **less than 10 seconds**. Independent studies have proven that JC-9465 effectively raises the oxidative energy of water, lowering the impact of microorganisms as well as improving the yield in agricultural applications worldwide.



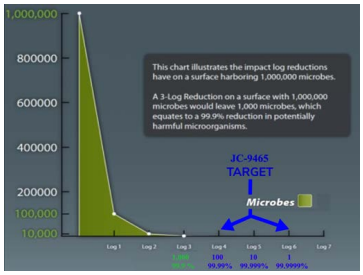
Reactive Oxygen Species generated by JC-9465 — hydroxyl radical, singlet oxygen, ozone, superoxide and peroxide species in oxidative equilibrium.

VALUE TO YOUR OPERATION

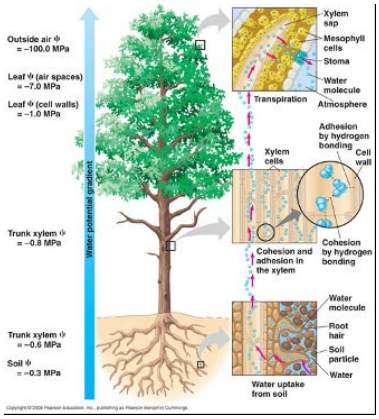
Benefits to the Agricultural Industry

We enhance your company's position as a leader in the agricultural industry and help facilitate the supply/value chain from pre-harvest to post-harvest.

- We eliminate microorganisms like Salmonella, Listeria and E.Coli with a 6-log reduction (much faster than the industry standard, 3-log) with NO change in the characteristics of food/crops/taste.
- Pathogens do NOT develop resistance to JC-9465.
- Low-cost method to increase the oxidative energy for healing plant life in a sustainable and ecological manner.
- Low-cost method to increase the dissolved oxygen in water — a crucial factor in achieving healthy root and plant growth. Healthy roots with a good supply of oxygen have better aerobic respiration and are able to selectively absorb more ions in solution.
- Improves yield of harvest with existing resources by increasing the oxidative energy in the root system and around the leaf and stem area.
- Controlled ripening and improved shelf life up to 2X by controlling biofilm on the surface.
- JC-9465 is USDA Organically certified for use as a crop production aid, disease and pest control aid, fertilizer and soil amendment aid, livestock production aid and processing, and handling aid for facilities requiring organic certification.
- We eliminate biofilm from all surfaces in contact with water such as drip irrigation systems, reducing clogging, improving efficiency and lowering costly maintenance expenditures.
- We use ROS to enhance the natural immune defense systems of plants and trees against pathogens, using less energy for survival which allows them to use more for growth.
- JC-9465 provides a residual protection that will continue to work and prevent bacterial growth in stagnant water.
- JC-9465 can reduce issues associated with spoilage, cross contamination and pesticides.
- Applications extend to sterilization and food preservation in post-harvest wash, packaging, storage and distribution, enhancing the supply chain performance.
- US EPA Registered, NSF Certified and USDA Organic Certified.



Log-reduction impact. A 6-log reduction leaves virtually no viable microbes vs. the 3-log industry standard.



Water potential gradient driving uptake from soil through the xylem to the leaves.

Real-time ORP monitoring in a controlled-environment operation.

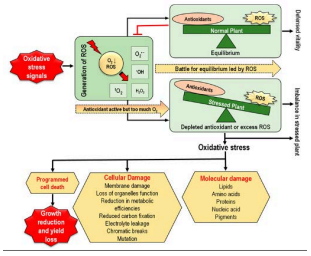
MECHANISM OF ACTION

How Does JC-9465 Work?

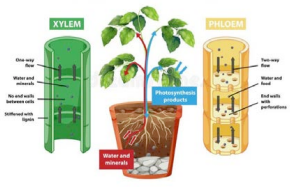
"An ecological and sustainable form of liquid ozone."

- Mineral oxychloride generates a high concentration of hydroxyl radical ions and other oxygen species that kill microorganisms in less than 10 seconds.
- It oxidizes and penetrates the cell membranes of microorganisms using available electrons, driving more energy and nutrients through the plants'/trees' xylem and phloem.
- Enhances the mobility of nutrients from the root system to the leaves.
- Molecules are purposely designed to be weakly bound together such that when it comes in contact with inorganics, microorganisms and organic matter, it readily gives off oxygen atoms that aggressively oxidize all contaminants.
- JC-9465 is catalyzed by the transition minerals' internal vibrational energy, which activates the reactive oxygen species. In this very energy-efficient process, all of the generated power is created and used at the atomic level.
- Hydroxyl radicals enhance the mineral oxychloride reagents' electrochemical potential, and it is the strongest oxidant in the water treatment industry, estimated to be in the range of 2.8 mV to 2.90 mV.
- The mineral oxychloride reagent is not linear in its pathway to oxidation. It is a continuous chain reaction that is autocatalyzed by the inherent catalysts. It will stay active and protect the water, and its residual oxidative energy will not diminish until a new contaminant is introduced into the system.
- JC-9465 controls biofilm by diffusion and penetration into the biofilm, damaging the cell membrane and its DNA. The reactivity of ROS in contact with organics causes an etching effect which creates a chemical breakdown of the EPS matrix (Extracellular Polymeric Substances), making it unable to hold the content of the bacteria.
- ORP refers to Oxidation Reduction Potential as measured in millivolts, which can be easily monitored from a sample of water.
- The following technologies have NOT been successful in removing biofilm: disinfection, flocculation, chlorination, coagulation, sedimentation, filtration, refining, UV irradiation and ozonation, irradiation with UV, ozonation and chlorination. They lack the ability to distribute sufficient oxidation energy (ORP) to control bacterial EPS and the AOC (Assimilable Organic Carbon) that feeds microbial colonies.
- Simple low-cost application — only requires a liquid dosing system with automatic ORP controller.

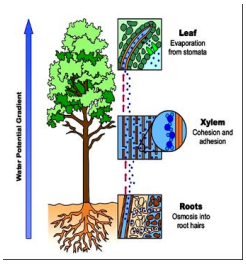
ROS attack pathogens on produce at the point of contact.



Oxidative-stress signaling overwhelms microbial antioxidant defenses.



Nutrient transport through xylem & phloem, enhanced by ROS.



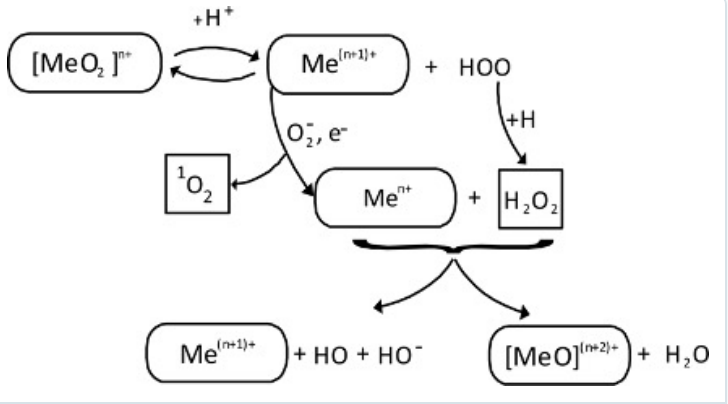
Water potential gradient — stomata to xylem to root hairs.

THE SCIENCE

The Power of JC-9465

Chemical Engineering for the 21st Century

JC-9465 is a new advanced oxidative technology for generating reactive oxygen species (ROS) that simulate an advanced oxidation process (AOP) as a tool to measure disinfection effectiveness in water treatment solutions.



Catalytic ROS generation. The metal catalyst cycles through oxidation states, producing singlet oxygen, hydroxyl radicals and peroxide species.

ORP Level (mV)	CFU/100 ml of Water
+200	300
+300	36
+400	3
+600	0*
+800	0**

*Water Disinfection
**Water Sterilization

ORP vs. microbial load. Higher ORP drives CFU toward zero — disinfection at +600 mV, sterilization at +800 mV.

- The **World Health Organization** recommends that water is safe at an ORP greater than **+750 mV**.
- ORP is important in disinfection because it measures the energy available for disinfection, the contact time required for disinfection, and optimizes the treatment based on system demand.

Proprietary Catalyst + NaHOCl → HOCl + OCl^- + OH^- + M Complexes

- JC-9465 is a low-cost producer of hydroxyl radical ions and is a very strong oxidant with a high concentration of oxidative energy; it has a higher electronic footprint (Ev) vs. a chemical footprint than other oxidants.
- JC-9465's electrochemical potential is **2.8–2.9 Ev**. Ozone is 2.07 Ev and Sodium Hypochlorite is 0.94 Ev.
- Ozone is a well-known disinfectant for treating water. It can achieve a 6-log reduction in less than 10 seconds.
- JC-9465 produces the same results as Ozone but at a higher Ev. It generates a larger variety of highly reactive oxygen species in oxidative equilibrium, perpetually catalyzed by the vibrational energy of the electrolytes in solution.

REAGENT NAME	FORMULA	ELECTROCHEMICAL POTENTIAL (Volts)
Fluorine	F^2	3.06
Mineral Oxychloride	$M_xO_yCl_z$	2.8–2.9
Hydroxyl Radical	OH^-	2.8
Oxygen Ion	O^-	2.42
Ozone	O_3	2.07
Hydrogen Peroxide	H_2O_2	1.78
Perihydroxil Radical	HO_2	1.7
Chlorine Dioxide	ClO_2	1.57
Hypochlorous Acid	HOCl	1.49
Chlorine Gas	Cl_2	1.36
Oxygen (Molecule)	O_2	1.23
Hypochlorite Ion	OCl^-	0.94
Sodium Hypochlorite	NaOCl	0.94
Hydroperoxide Anion	HO_2^-	-0.88
Superoxide Radical	O_2^-	-2.4

Electrochemical potential of oxidants (Volts). Mineral Oxychloride (2.8–2.9 V) exceeds Ozone (2.07 V) and far exceeds chlorine compounds.

HEAD TO HEAD

JC-9465 vs. Ozone & Chlorine

- JC-9465 recreates an aqueous environment like ozonized water; however, it is much faster, more efficient and has a more stable chemical dynamic by having hydroxyl radicals dominating over the oxygen ions.
- JC-9465 outperforms chlorine at a lower dosage (using ORP and dosage as measurement).

	OZONE	JC 9450
FORM (EASE OF HANDLING)	Gas - Hard to dissolve	Liquid - Ready to Use
OXIDATION POTENTIAL (VOLTS)	2.07	2.70
SOLUBILITY IN WATER (%)	5% Max	100%
FORMULA	O_3	ROS (Hydroxyl Radical Ion)
HANDLING	Very Dangerous. Explosive.	Very Safe. Corrosive 8 due to high pH of neat product.
ORGANIC OXIDATION	High	High
POTENTIAL BY-PRODUCTS	Bromate, HAA5's	None
RESIDUAL PROTECTION	No	Yes, Using ORP (MV)
REMOVE TASTE & ODOR	Yes	Yes
REMOVE WATERBORNE PATHOGEN	Yes	Yes
CAPITAL COST	Very High ($$$$$)	Very Low ($)
AIR PRETREATMENT	Extensive	None

Ozone vs. JC-9450 / JC-9465. Ready-to-use liquid, higher oxidation potential, 100% solubility, no bromate/HAA5 by-products, residual protection, and far lower capital cost.

JC-9465 is a new mineral oxychloride chemistry that is NSF approved, EPA registered as a biocide and USDA Organic Registered for use in applications requiring organic products only. In a study conducted by Special Pathogen Lab (PA) using JC-9465, they confirmed that controlling the ORP range above **+700 mV** effectively achieved a 6-log reduction of pathogens in less than 10 seconds. JC-9465 is a mineral oxychloride chemistry that mimics nature's ability to generate a very high concentration of ROS in the form of hydroxyl radical ions and singlet oxygen ions. Please contact us for more detailed information on this technology and how it can help you achieve better safety and profits in your agricultural application.

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WHERE IT WORKS

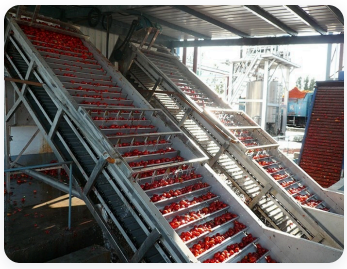
Applications Across Agriculture & Food

From pre-harvest fogging and irrigation to post-harvest washing, packaging, storage and distribution.













Agave cultivation — pre-harvest ROS treatment

Proven across crops and channels: avocados, tomatoes, melons, berries and citrus in the field, greenhouse, packing line and processing plant — improving microbial safety, controlling biofilm and extending shelf life throughout the supply chain.

ADDENDUM 1

Applications in Agriculture

JC-9465 is a transformative and revolutionary chemistry that has been successfully integrated into the operations of many agricultural applications worldwide. The scope of applications extends from pre-harvest (such as fogging and irrigation) to sterilization and food preservation in post-harvest applications such as washing, packaging, storage and distribution. The following summarized excerpts are a few examples of field studies, client reports, and internal/external independent research studies. Please contact us for more detailed information on how JC-9465 can improve safety and profits in your business.

CASE STUDY • FLORIDA

JC-9465 Mineral Oxychloride Rescues the Citrus Market

Working hand in hand with GreenAgri Solutions LLC, Jenfitch developed a treatment plan for an infectious bacterium called huanglongbing (HLB), commonly known as "citrus greening." The leaves of newly affected citrus trees had developed a blotchy mottle appearance and the fruit was of no value as it had limited use in juicing operations. At the time, there had not been a commercially available solution to this problem, except removing trees and re-planting several seasons later. The leaves of one test tree were sprayed and the roots watered with a JC-9465 solution that generated an oxidized water having an ORP (oxidation-reduction potential) greater than +700 mV. Infected leaves were removed and after a week they started seeing a new "flush" of leaves on the infected tree. The test was expanded to 20 trees. After 60 days of irrigating and spraying the trees with a +700 mV solution of the mineral oxychloride solution, all the trees in the test started to develop marketable fruit.

Honey tangerine trees infected with HLB showing severe decline. Medium-to-large blister-like lesions caused by canker and greening are apparent.

Treatment: foliar application and light soil drench with a strong 2% solution of JC-9465, applied early morning every 2 weeks for 6 weeks (3 applications).

New flush shows no signs of infection on the leaves. After 60 days of irrigating, all trees started to develop marketable fruit.

CASE STUDY • SOUTHERN EUROPE

ROS Generated by JC-9465 is Effective Against Xylella Fastidiosa

Jenfitch was approached by an olive grower in Europe who had been struggling with a deadly tree-killing bacterium, Xylella Fastidiosa, which has killed millions of olive trees in Southern Europe. Maria Saponari, a plant virologist at the institute for "Sustainable Plant Protection" in Italy, compares Xylella to the coronavirus. Just as COVID-19 keeps oxygen from reaching our vital organs, she says, Xylella attacks and clogs the xylem tubes of olive trees by forming a biofilm, so they can't absorb water. Xylella spreads quickly and once the bacteria infiltrates the host, there is no cure for it — **until now.**

As per EU regulation, Xylella Fastidiosa is considered a quarantine pest, which when detected must be contained or eradicated. A test solution of JC-9465 was prepared and applied to a small test site, implemented in fogging and root irrigation, effectively destroying and controlling the biofilm that blocks the movement of water and nutrients in the host. By generating hydroxyl radical ions, JC-9465 breaks down the extra-polymeric substance (EPS) which forms a sticky substance that acts as a protective film around bacteria. Once the EPS is destroyed, other oxidative species quickly attack the DNA of the bacteria's nucleus to inactivate and prevent reproduction or mutation. Albeit early, the results reported have been extremely positive — with leaves turning green, branches and twigs showing signs of recovery and returning to normal production with good numbers. The tests have been expanded to larger sites and preliminary PCR results are very promising.

CLIENT REPORT • BIRMINGHAM, MN

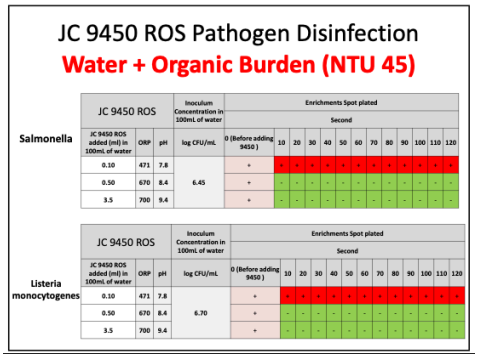
M&R Farms Uses JC-9465 as a Primary Solution for Their Packing Facility

M&R Farms in Birmingham, Minnesota uses JC-9465 as a primary solution for their packing facility. They have also incorporated JC-9465 into their ice-making machines, improving product shelf-life as well as eliminating biofilm. By injecting JC-9465 into the water lines supplying the ice machines, the ORP readings went up from 451 to 632. Once converted to ice, the readings had increased to 783 ORP, destroying virtually all pathogens such as Listeria and Salmonella. Furthermore, when the ice melted it continued to have the disinfecting power of JC-9465, as measured by ORP. Since incorporating JC-9465, their ice is much flakier, the machines are running cleaner and producing more ice daily. By removing pathogens and controlling biofilm with JC-9465, M&R Farms was able to improve safety and extend shipping and shelf life of produce, seafood and meat products.

INDEPENDENT STUDY • U.C. DAVIS POST-HARVEST DEPT.

Raising ORP to +700 mV Inactivates E.Coli, Salmonella & Listeria in <10 Seconds

Independent studies at the U.C. Davis Post-Harvest Department confirm that JC-9465 effectively raises the ORP to +700 mV, inactivating E.Coli, Salmonella and Listeria in less than 10 seconds and improving shelf life up to 2X. JC-9465 was tested and evaluated by one of the leading and well-known plant pathologists in the US for safety in controlling pathogens such as E.Coli, Salmonella and Listeria, as well as its effectiveness in controlling biofilm — which many food researchers believe is the source of contamination and spoilage. The results are shown below:



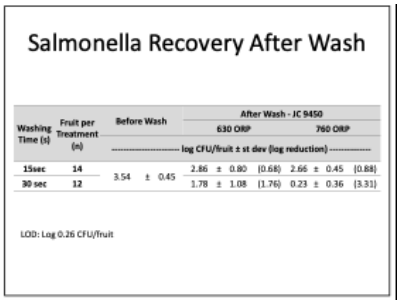
JC-9450 ROS pathogen disinfection in water + organic burden (NTU 45) — Salmonella & Listeria fully inactivated at ORP +700 mV.

RASPBERRY SHELF-LIFE TRIAL

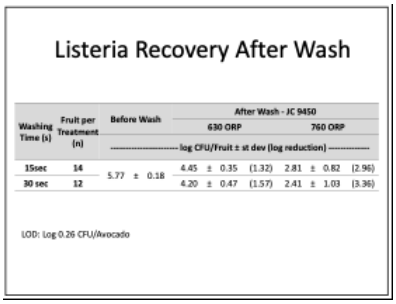
Day 12

Day 18

Fresh raspberries from a grocery store were rinsed with JC-9465. 12 days later, untreated raspberries started showing mold, while the treated raspberries were still fresh and marketable. 18 days after purchase the treated fruit started showing mold for the first time. The average shelf life in a store is 6 days.



Salmonella recovery after wash — log reductions at 630 and 760 ORP.



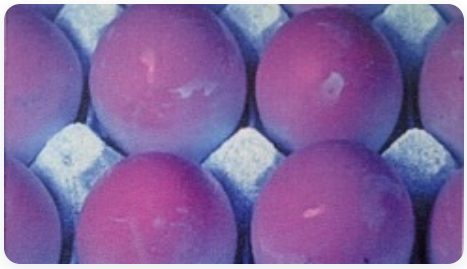
Listeria recovery after wash — log reductions at 630 and 760 ORP.

CLIENT REPORT • MONTANA

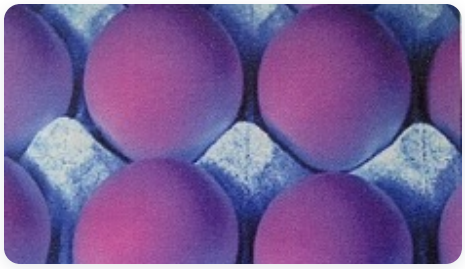
Poultry Farmer — Cleaner Eggs, Lower Cost, Organic-Safe

A poultry farmer in Montana contacted Jenfitch after reviewing the studies highlighting the effectiveness of JC-9465 in eliminating Salmonella, Listeria monocytogenes and other pathogens, as well as the effectiveness and lower cost of JC-9465 compared to Sodium Hypochlorite, UV and Ozone. Their main concern was decreasing the bacterial load on the shell surface of eggs and preventing the infection of eggs through horizontal transmission, while still maintaining their USDA "Certified Organic" assurance. Application of JC-9465 in their egg-washing operation produced cleaner eggs, with less breakage, and eliminated the microorganisms with a lower contact time than the previous sanitizing compounds. Furthermore, they were able to adjust the temperature of the water and still produce a microbiologically safe egg, saving energy costs associated with water heating. Recent feedback has shown improved cost-effectiveness in the pasteurization process as well as increased sales of eggs to local hatcheries — with better hatching results and healthier chicks.

Egg-washing line



Pre-Wash (microbial stain)



Post-Wash (reduced load)

CLIENT REPORT • CANADA

Walking Strong — A Dairy Farmer's Hoof-Care Protocol

Lameness and reduced mobility in dairy cows — caused by foot rot, heel erosions, sole ulcers and digital dermatitis — have led to body weight loss, decreased milk production, and lower longevity and reproductive efficiency. Concerned with the toxicity of formalin and copper sulfate, as well as the high cost of antibiotics, the farmer searched for an alternative treatment. A "pre-footbath" area was used to minimize organic matter. A trial with 1 gallon of JC-9465 solution per 50 gallons of water was applied to the 10-inch-high footbath area along the exit lanes of the milking parlor, where cattle passed several times a day. A system was put in place to monitor the ORP of the water (in mV) — the oxidative power (energy available for disinfection) of the solution — as an aid to determine the frequency of solution replenishment. Results showed a marked improvement in hoof hygiene, lower bacterial count and fewer reported cases of digital dermatitis. Visual inspections showed lower interdigital inflammation after a few passes through the foot bath.

JC-9465 ORP-monitored footbath

#1-RANKED PLANT SCIENCES RESEARCH FACILITY (US)

JC-9465 as an Antimicrobial Process Aid for Produce Wash — Avocados

A cocktail of Listeria Monocytogenes (PTVS 334 + 335) was prepared and avocados inoculated. **Trial #1:** 100 µL of Log-7 CFU/mL (anticipated log4/fruit after drying). **Trial #2:** 100 µL of Log-8 CFU/mL (anticipated log5/fruit after drying).

Once inoculated, avocados were allowed to dry at room temperature for 4 hours while covered with cheese cloth, before being kept at 10 °C for 3 days. For each trial, 15 uninoculated avocados were submerged with 5 inoculated avocados in a mixture of 10L of water and JC-9465 at 4 °C for 30 seconds with mild agitation. This was done twice per trial with different disinfectant doses. A control wash was performed for each treatment by submerging 5 inoculated avocados in 10L of water at 4 °C with mild agitation, removed after 30 seconds (a control for water-only detachment of rind contamination).

All avocados were massaged vigorously by hand with 20ml of potassium phosphate buffer + Tween for 1 min and the fruit discarded. For mixed avocados, 20 ml (± fruit-adhering liquid) wash-buffer was enriched with 20 ml of 2X IEB followed by 48-hr incubation at 37°C; 50 µL of each sample bag was spot-plated on CHROMagar Listeria + Rif then incubated for 48 hr at 37°C. For inoculated avocados, 2 ml of wash-buffer was extracted for quantification and the remaining 18ml of 2X IEB added to each sample bag; quantification by concentrating, direct and dilution plating on Chromagar Listeria + Rif then 48-hr incubation at 37°C.

Sodium hypochlorite was added to the wash water from inoculated fruit to obtain a final solution of 20–40 PPM of free chlorine at pH 7.0. 10 ml of water was sampled at 0, 5, 15, 30, 45, 60, and 300 seconds and placed in Whirl-pak bags withholding neutralizing buffer until each time-point extraction. Water samples from the control wash were added to a bag with 10ml of 2X LEB, followed by 48-hr incubation at 37°C; 50 µL of each bag was spot-plated on CHROMagar Listeria + Rif then incubated for 48 hr at 29°C to increase sub-lethal injury resuscitation.

RESULTS 2-May-16

log CFU/avocado ± st dev (% enrichments positive)

TREATMENTS	Trial 1		log reduction	Trial 2		log reduction
Before	3.63 ± 0.88 A	(100)		4.20 ± 0.72 A		
After	2.00 ± 0.50 B	(100)	1.63	1.79 ± 0.53 B	(60)	2.41
JC-9465 Low Dosage	1.67 ± 0.44 B	(80)	1.96	2.12 ± 0.86 B	(80)	2.08
JC-9465 High Dosage	1.32 ± 0.16 B	(20)	2.31	1.26 ± 0.00 B	(20)	2.94

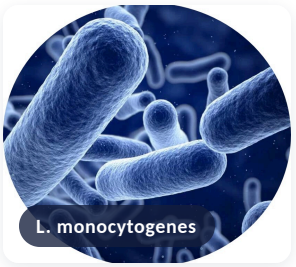
No cross-contamination to uninoculated avocados detected

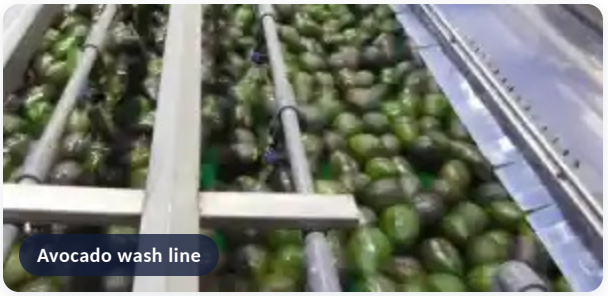
Results. Log CFU/avocado ± st dev — JC-9465 high dosage achieved up to 2.94 log reduction, with no cross-contamination to uninoculated avocados detected.

Water Parameters						
	Disinfectant Dose	ORP (mV)	pH	Temp (°C)	Amount of JC-9465 added (mL)	Final Volume (L)
Trial 1	JC-9465 Low Dosage	400	10.1	3.6	100	10
	JC-9465 High Dosage	420	12.0	3.8	750	10
Trial 2	JC-9465 Low Dosage	630	9.9	3.5	100	10
	JC-9465 High Dosage	467	11.8	3.6	750	10

Water parameters — disinfectant dose, ORP (mV), pH, temperature and JC-9465 volume for each trial.

Listeria assay


L. monocytogenes


Avocado wash line

PEER-REVIEWED • FRONTIERS IN MICROBIOLOGY

Controlling Listeria monocytogenes on Fresh Apples & Preventing Cross-Contamination

Recent multistate outbreaks and recalls of fresh apples due to Listeria monocytogenes contamination have increased consumer concerns regarding fresh and processed apple safety. This study evaluated the antimicrobial efficacy of two sanitizers — mineral oxychloride (JC-9465) and neutral electrolyzed water (NEW) — for inactivation of L. monocytogenes on fresh apples. A 2-min treatment of 0.125% (v/v) JC-9465 with 100 ppm free available chlorine (FAC), or NEW with 110 ppm FAC, caused a 0.9–1.2 log10 CFU apple reduction of L. monocytogenes on both Granny Smith and Fuji apples 24 h post-inoculation. Increasing JC-9465 concentration to 0.25 and 0.50% significantly improved its bactericidal effect and reduced L. monocytogenes on Granny Smith apples by ~2.0 and 3.8 log10 CFU/apple, respectively, after a 2-min contact time. At a shorter contact time of 30 sec, inactivation efficacy of chlorine and 0.25–0.50% JC-9465 was significantly reduced compared with the respective 2-min wash. Furthermore, no L. monocytogenes was recovered in deionized-water-prepared antimicrobial wash solution or on non-inoculated apples post-NEW (110 ppm FAC) or 0.125–0.5% JC-9465 washes, indicating their ability to prevent cross-contamination. A 2-min exposure to NEW with 110 ppm FAC and 0.50% JC-9465 reduced apple native microbiota including total plate count by 0.14 and 0.65 log10 CFU/apple, respectively, and yeast and mold counts by 0.55 and 1.63 log10 CFU/apple, respectively. In summary, L. monocytogenes attached on apples was difficult to eliminate; JC-9465 and NEW demonstrated a dose-dependent reduction and successfully prevented cross-contamination, indicating their application potential in post-harvest washes of apples.

FIELD TEST • SOUTH EAST ASIA

Controlling Bakanae Disease (Fusarium fujikuroi) in Rice

Suffering from approximately 30% loss in yield, a paddy farmer contacted Jenfitch to test JC-9465 as an alternative treatment for chemical seed dressing. Existing treatments such as thermo-therapy and aqueous suspensions containing fungicides have produced mixed results. Thermal effects do not reach the pericarp of severely infected seeds, and fungicide treatments do not work well for destroying the spores of this fungal pathogen. Furthermore, some pathogens have shown resistance to fungicides. The flooding of rice fields also decreases the soil reduction-oxidation (redox) value, which intensifies emissions of greenhouse gases and increases the plant mobility of Arsenic (As) to rice — a public health risk, particularly concerning the iAs content of rice-based baby foods.

In a study conducted by the Department of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center (Baton Rouge), it was concluded that "Bacteria were completely eliminated from rice seeds following immersion in a Sodium Hypochlorite solution adjusted to pH 7.0 in 0.5 M potassium phosphate, while fungi were eliminated at pH 5.0 and below." Although JC-9465 had not been tested directly in rice farming prior to this, our proprietary mineral oxychloride has a higher electronic footprint (Ev) vs. a chemical footprint than other oxidants. Customer-feedback test results prove that a higher concentration of oxidative energy produced by JC-9465 was more effective than existing treatments. JC-9465 effectively suppressed horizontal transmission of the pathogen between seedlings. Visible Bakanae symptoms of altered morphology improved significantly and yield loss was reduced to below 10%. Tests have expanded to incorporate spraying of the rice flowers and treatment of wastewater for paddy field flooding.

Table 2. Efficacy of surface-sterilization of rice seeds with different chemical treatments

Treatments	Percent of seeds contaminated with Bacteria	Fungi
Control[u]	98 e[v]	100 f
Vitavax 200FF[w]	85 d	18 ab
$HgCl_2$ (500)[x]	21 b	45 d
$HgCl_2$ (1,000)	9 a	45 d
$HgCl_2$ (2,000)	9 a	40 d
$HgCl_2$ (3,000)	3 a	27 c
$HgCl_2$ (4,000)	2 a	25 bc
$HgCl_2$ (5,000)	2 a	13 a
Household bleach (pH 11.6)[y]	41 c	61 e
Household bleach (pH 7.3)[z]	3 a	43 d

[u] Sterile distilled water.
[v] Values followed by the same letters within columns are not significantly different (Student-Newman-Keuls test, $P = 0.05$). Statistical analyses were conducted following arcsine transformation of percent contamination (24).
[w] Composed of 17.5% carboxin and 17.5% thiram (25). Treated seeds were soaked in sterile distilled water for 2 h.
[x] Numbers in parentheses are the concentrations of mercuric chloride (μg/ml).
[y] 50% household bleach (2.6% NaOCl) in

Table 2. Efficacy of surface-sterilization of rice seeds with different chemical treatments (% contaminated with bacteria / fungi).

Rice seedling response across treatment conditions (a, b, c).

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