

Freezing May Not Sterilize Food

BY TIMOTHY F. KIRN
Sacramento Bureau

INCLINE VILLAGE, NEV. — Freezing a food does not always kill all the bacteria in it.

Covering boiling water helps kill all the organisms in the pot.

And houseflies can carry pathogenic *Escherichia coli*.

Those are some of the intriguing findings of recent studies in food-borne infectious disease, said Robert W. Derlet, M.D., at an annual emergency medicine meeting sponsored by the University of California, Davis.

U.S. Department of Agriculture researchers looked at whether refrigerating or freezing chicken at either 4° C or -20° C would kill *Campylobacter jejuni*, which is prevalent in U.S. poultry, according to Dr. Derlet, who is the chief of emergency medicine at the University of California, Davis.

They found that when the chicken was frozen for 1 week, about 10% of the *C. jejuni* population survived, and when it was frozen for 2 weeks, 5% survived.

Obviously, most home refrigerators cannot achieve -20° C.

In addition, he said, "Other studies have shown that even with months of freezing, some bacteria that are hardy survive. *E. coli*, as well as *Salmonella*, tend to be hardy environmental organisms." The researchers concluded that freezing is not a substitute for proper cooking (Appl. Environ. Microbiol. 2004;70:7103-9).

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Researchers from the Centers for Disease Control and Prevention, who are studying *Bacillus anthracis* because of its potential use as a bioterrorism agent, investigated whether boiling water contaminated with the organisms would sterilize the water. They found that when the water was covered and boiled for 3 minutes or 5 minutes, all the organisms were killed.

However, when the water was boiled uncovered, high numbers of the organisms survived (Emerg. Infect. Dis. 2004;10:1887-8).

Some organisms can encapsulate into spores and survive intense temperatures, Dr. Derlet said. Clostridia, for example, form temperature-resistant capsules that break down when they cool, which is why there are instances of people becoming sick after eating soup that has cooled.

Researchers at Kansas State University collected flies from a cattle farm in that state to see if the insects could be contributing to dissemination of *E. coli* O157:H7, which may be present in up to 40% of beef that comes from a feedlot or

passes through a stockyard.

The investigators found that 6% of the flies collected harbored the organism, which can cause hemolytic-uremic syndrome (Appl. Environ. Microbiol. 2004;70:7578-80).

Flies can also carry *Shigella*, *Salmonella*, and cholera, and a fly needs only a second to get its mouth parts onto your food—though it is not known if in that time the fly can deposit enough organisms to make someone ill.

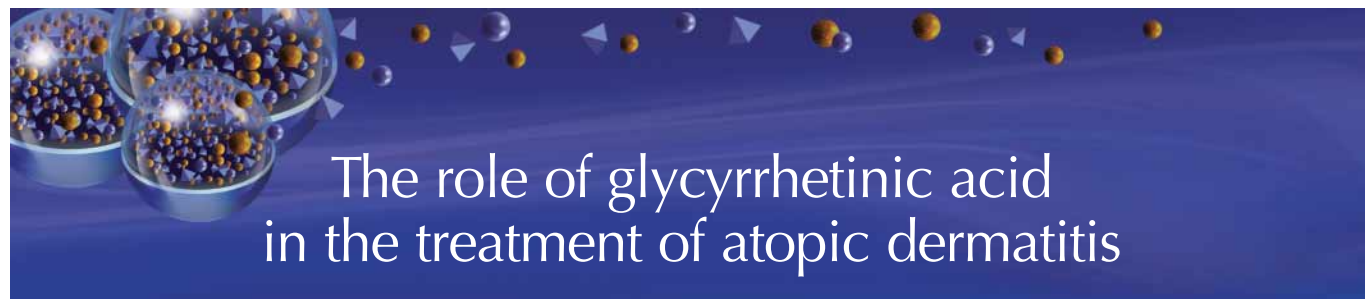
An investigation of an outbreak of perhaps 3,000 cases of salmonellosis contracted from raw tomatoes served at a fast-food restaurant chain in 1999 demonstrated that *Salmonella enterica* can be transferred from hands and grow rapidly in tomatoes, Dr. Derlet noted.

A recent study has now shown that it can survive on vegetables for 200 days, at least under experimental conditions (Appl. Environ. Microbiol. 2004;70:2497-502). ■

VERBATIM

'You have to maintain balance. Otherwise, you're not good to anybody. From a hobby perspective, that's important.'

Dr. Carl C. Bell, p. 46



The role of glycyrrhethinic acid in the treatment of atopic dermatitis

In response to the urgent clinical need for nonsteroidal therapy to treat inflammatory skin diseases, scientists have focused on an anti-inflammatory agent with intriguing pharmacologic properties. Glycyrrhethinic acid is part of the triterpene chemical family and is derived from licorice root. Contemporary research has identified anti-inflammatory, antiulcer, antiallergic, antiviral, antibacterial, and hepatoprotective effects demonstrated systemically by glycyrrhethinic acid.^{1,3}

The active compound, 18-β-glycyrrhethinic acid, demonstrates anti-inflammatory and antiherpetic actions after topical application.² Experimental models in skin demonstrate anti-inflammatory activity comparable to that of the potent, nonsteroidal agent, indomethacin.² Glycyrrhethinic acid inhibited the intensity of the inflammatory response by 74% and inhibited leukocyte infiltration.² In the past decade, clinical studies have defined a role for glycyrrhethinic acid in the treatment of atopic dermatitis.^{4,5}

Clinical efficacy in atopic dermatitis

Patients exhibited a clinically meaningful response to the skin-calming, anti-inflammatory effects of glycyrrhethinic acid in a clinical trial published in 2003.⁴ The trial evaluated the effect of glycyrrhethinic acid 2% topical gel on flare symptoms of atopic dermatitis. The randomized study of 108 patients showed significant reduction in scores for edema (-84%), itching (-73%), and erythema (-61%) from baseline. Glycyrrhethinic acid significantly reduced symptoms vs placebo at both 1 week and 2 weeks ($P < 0.01$) after treatment. No adverse events were reported.

Synergistic activity with corticosteroids

The mechanism of anti-inflammatory activity exhibited by glycyrrhethinic acid is under investigation. It primarily acts on enzyme metabolism, inhibiting the enzyme 11-β-hydroxysteroid dehydrogenase (11-β-OHSD). In the

skin, this enzyme is known to convert the active hormone cortisol to the biologically inactive product cortisone.⁵

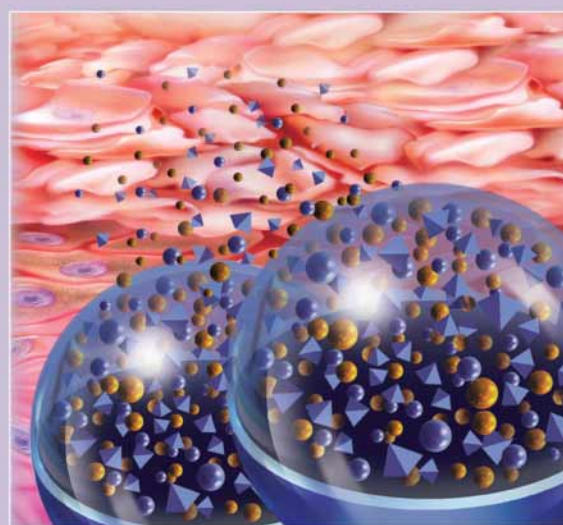
A study combining topical glycyrrhethinic acid with hydrocortisone yielded important results.⁵ By blocking 11-β-OHSD, glycyrrhethinic acid delayed the conversion of hydrocortisone to its inactive state, thereby extending its presence and activity in the skin.⁵ The ability of glycyrrhethinic acid to potentiate the activity of a low-potency corticosteroid has implications for clinical practice and warrants further investigation.

Maximizing the clinical benefit for patients

Currently, there is a need for new treatment options with anti-inflammatory properties to safely manage the chronic symptoms of atopic dermatitis. Chester Valley Pharmaceuticals recognizes the clinical value of glycyrrhethinic acid, based on its demonstrated ability to calm irritated skin by relieving painful itching and edema.⁴ With a safe and mild nonsteroidal, anti-inflammatory profile, glycyrrhethinic acid may have utility for long-term control of the itch-scratch cycle.

Chester Valley Pharmaceuticals is committed to a new approach to disease management that focuses on both symptom relief and simultaneous restoration of normal skin-barrier function. A model

topical therapy for atopic dermatitis would provide relief of inflammatory symptoms with glycyrrhethinic acid while also providing key lipids and hydrating components to help restore skin-barrier function. Under the management of a physician, a single therapy that calms, restores, and protects skin could fill a gap in the current management of atopic dermatitis.



Treatment model: Relief of inflammatory symptoms with restoration of skin-barrier function via a formulation of glycyrrhethinic acid, key lipids, and hydrating components.

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ADVANCING THE SCIENCE OF DERMATOLOGY THROUGH INNOVATION

