National Park Service
U.S. Department of the Interior

Zion National Park

The Good
Microorganisms in My Lunch

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Microorganisms in My Lunch!

Food	Name of Microorganism Inside	Type of Microorganism (fungi? bacteria? etc.)	Notes on How or Why It's Used

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Microorganisms in My Lunch! Reference Sheet

Main Course, Sandwich Fixings, and Salad Toppings

- **Bacon:** The bacteria *Micrococcus* helps cure and preserve bacon.
- **Bread (all, including hamburger buns, pizza crust, and sandwich bread):** *Saccharomyces cerevisiae*, or yeast, is a type of fungi used to make bread rise. The small holes that make bread squishy are the result of carbon dioxide bubbles produced by the yeast.
- **Bread (sourdough):** *Lactobacillus hammesii* is a bacteria that gives sourdough bread its sour taste. Like all breads, sourdough also contains *Saccharomyces cerevisiae,* or yeast, a type of fungi used to make bread rise. The small holes that make bread squishy are the result of carbon dioxide bubbles produced by the yeast.
- **Cheese (all types, including macaroni and cheese):** *Lactobacillus*, *Lactococcus,* or other bacteria act as the starting culture for the cheese, turning the milk hard while keeping the cheese moist.
- **Cheese (soft, such as Brie, bleu, Roquefort, Gorgonzola):** *Lactobacillus* or other bacteria act as the starting culture for the cheese, turning the milk hard while keeping the cheese moist. The fungi *Penicillium camembert* is then added to give it its distinct flavor.
- **Chicken/fish nuggets, patties:** *Saccharomyces cerevisiae* (yeast, a fungi) is used in the breading of chicken and fish before frying.
- **Ham:** The bacteria *Micrococcus* helps cure and preserve ham.
- **Jam and jelly (store-bought):** *Phaeophyceae*, a brown seaweed (algae) is the source of alginic acid which is used as a thickener in some jams.
- **Ketchup:** Ketchup is made with vinegar which is produced when *Acetobacter* bacteria cause ethanol or other substances to ferment.
- **Mayonnaise:** *Phaeophyceae*, a brown seaweed (algae), is the source of alginic acid which is used as a thickener in dairy products.
- **Mushrooms:** Mushrooms are part of the fungi family and are actually millions of microorganisms clumped together.
- **Pepperoni, salami, and sausage:** *Lactobacillus* bacteria used to develop the flavor and color of the meat. *Penicillium chrysogenum* fungi is used to preserve the meat and give it its flavor.
- **Pickle*:*** *Leuconostoc mesenteroides* is a type of bacteria that ferments vegetables, turning a cucumber into a pickle.
- **Soy sauce (including teriyaki sauce)*:*** *Aspergillus oryzae* is a fungi added to soy to ferment it and give soy sauce its distinct flavor.
- **Vinegar (in many salad dressings):** *Acetobacter* bacteria cause ethanol or other substances to ferment and turn into vinegar.

Snacks

- **Chips or crackers made with real cheese (i.e. Doritos, Cheetos, Cheez-Its, etc.):** *Lactobacillus* bacteria acts as the starting culture for the cheese, turning the milk hard while keeping the cheese moist.
- **Crackers:** Some crackers contain yeast extract, taken from the fungi *Saccharomyces cerevisiae* to help leaven or flavor the crackers (if you have the label, check the ingredients).
- **Dips (i.e. ranch dip):** *Lactococcus lactis* is a bacteria that helps make sour cream from milk. *Phaeophyceae*, a brown seaweed (algae), is the source of alginic acid which is used as a thickener in dairy products such as sour cream and mayonnaise.
- **Yogurt:** *Streptococcus thermophilus* bacteria ferment milk into yogurt and are present as live cultures in all yogurts. Alginic acid is derived from *Phaeophyceae*, a brown seaweed (algae), and used as a thickener in most dairy products.

Desserts

- **Chocolate (including brownies, chocolate chips, etc. but does not include white chocolate)***:* *Saccharomyces cerevisiae* and *Candida rugosa* (types of yeast) ferment cocoa beans, critical to make a raw cocoa bean less bitter and turning it into chocolate.
- **Pudding:** *Phaeophyceae*, a brown seaweed (algae,) is the source of alginic acid which is used as a thickener.

Drinks

- **Soda/pop (only root beer or ginger ale):** *Saccharomyces cerevisiae* (yeast, a fungi) is added to increase carbonation.
- **Milk (chocolate):** *Saccharomyces cerevisiae* and *Candida rugosa* (types of yeast) ferment cocoa beans, critical to make a raw cocoa bean less bitter and turning it into chocolate.

And of course, you can find many harmless bacteria on fruits and vegetables, in your milk, and even floating through the air. Always make sure to properly wash, cook, and store food (especially meats) to make sure tiny amounts of harmless bacteria do not become dangerous.