New roles for old food processing bacteria, Lactobacilli

Common uses of Lactobacilli
By Massiel Lara & Kristo Kpellie

Lactobacilli is a group of 125 bacteria that are widely used in food production such as yogurt, cheeses, sausages, etc. They obtain energy by breaking down carbohydrates in the food to produce lactic acid thus making food acidic.

The first Lactobacillus was discovered by a Dutch biologist, Martinus Beijerinck, in 1901. Lactobacilli are mostly Gram positive, acid tolerant, rod shaped bacteria. They live in oral cavities, intestinal tract, vagina, digestive and urinary systems. They help to ensure the proper functioning of our immune system to fight off infectious bacteria. They are also used for treating and preventing certain diseases such as yeast infections. Currently, they are being studied to treat and prevent various diseases and disorders, as discussed in following sections of this poster.

Breast Cancer Prevention.
By Mazaliz Karine Legzn & Juana Mateo

Breast cancer is one of the most frequent malignancies. One recent study suggested that diet rich in cultured dairy products might inhibit certain types of cancer.

In one study, half of the mice were fed with regular diet and the other half were fed with regular diet plus bacterium Lactobacillus helveticus for seven days. The mammary glands of both groups of mice were then injected with cancer cells (471 cells). Both groups of mice were fed with fermented milk for another 26 days. The growth of cancer cells was stopped or slowed in mice fed with the bacterium L. helveticus, which might have triggered stronger immune responses against cancer cells.

It is an interesting lead that might shed new light on cancer prevention and therapy.

Beijing Institute
L. jensenii
Yogurt
Lactobacillus, pictured on the left, is being explored for other health applications in addition to its traditional roles in food processing

Keywords: Probiotic Supplements

Combat Gonorrheal Infection
By: Arvind Budhram and Vidya Briggall

Gonorrhea (caused by bacterium Neisseria gonorrhoeae) is a common sexually transmitted disease, affecting over 700,000 people in the U.S. annually. The most common site of gonococcal infection is the female lower genital tract. Now, common vaginal anaerobic bacteria Lactobacillus are being studied as a potential weapon against gonorrhea.

Researchers from the Uniformed Services University in Bethesda Maryland found that four lactobacilli strains, L. jensenii, L. crispatus, L. acidophilus, and L. gasseri are most common in the vaginal tract. The presence of these Lactobacillus inhibited all gonococcal strains at low pH. In addition, L. jensenii and L. crispatus, which accounts for 23% and 32% of the total vaginal colony population, can produce hydrogen peroxide (H₂O₂), which is commonly used to clean skin wounds. This suggests that these H₂O₂ producing strains could be more effective in combating gonorrhea.

While promising, much more research will have to be carried on the effects of physiological conditions on Lactobacillus growth in the vaginal tract before they can be used as an effective way to fight gonorrheal infection.

Weight loss management regimes
By Kristina Collins & Lexey Darby

Recent findings have shown the potential of using natural gut microbiota such as Lactobacillus paracasei in weight loss management. This year, a new study from Karolinska Institute Sweden suggests that L. paracasei can modulate fat storage in both mouse and human. This new finding will certainly encourage more follow up study of this and of natural gut bacteria as probiotics in weight control.

Food Sources: Yogurt, Dannon Yogurt, Cheddar Cheese, Cultured Milk

Our findings

Microbes on our computers

By Samsiya Oma, Regina Oziekm, Padma Paramananda, Keyda Guiles, Abbey Rajo, Maria Ramnarayan, Rosemary Trineo, and Wilfredo Valentine

Our findings

Microbial Growth on Computer Keyboards at tested areas at Lehman College campus

Testing Method
1) Print finger on plate shown on the right.
2) Wash and print finger.
3) Rub finger on “R” key of a computer and print finger on plate.
4) Rub the “R” key with a cotton swap and print on plate.
5) Rub the “R” key with a wet cotton swap and print on plate.
6) Incubate the plate at 30 degree for 2 days.
7) Count the number of colonies at each finger and cotton swap.

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Results and Discussion

Overall, our results shown that there are more microbes on multisurface computers than single user computers. As shown in figure 1, the number of microbes on our fingers changed significantly after touching the “R” key when compare washed vs. “R” key. This would suggest that microbes were either transferred from our fingers to the “R” key or from the “R” to our fingers. What is surprising is the number of microbes on our fingers actually increased after wash and dry with air blowers. A quick test of blower alone seems to confirm that blow dry could increase microbes on your hands. The most encouraging finding we have is that the number of microbes on “R” key is on mulituser computers at Lehman is very lower, suggesting Lehman students are keeping their hands clean most of the time when using multisuser computers.

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