Antibiotic Resistant Antimicrobial Strategy

When subjected to MCFIP's quantum biology model, the findings relative to GML were summarized and affixed to this article for discussion with computational biologists.

Note: With near certainty, these findings provide a medicinal epigenetic foundation from which antibiotic resistant microbes can be killed.

https://neurosciencenews.com/breastmilk-bacteria-15061/

Compound in breast milk fights harmful bacteria

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Summary: *Glycerol monolaurate (GML), a compound found in human breast milk, fights against the effects of harmful bacteria while allowing beneficial bacteria to thrive. GML also inhibits inflammation in epithelial cells, helping to prevent both bacterial and viral infections of the gut. GML is 200 times higher in human breast milk than cow milk. Researchers propose adding GML to infant formula and cow milk given to small children.*

Source: *National Jewish Health*

Researchers at National Jewish Health and the University of Iowa have identified a compound in human breast milk that fights infections by harmful bacteria while allowing beneficial bacteria to thrive. Human breast milk has more than 200 times the amount of glycerol monolaurate (GML) than is found in cows' milk. Infant formula has none. GML is inexpensive to manufacture. Future research will determine if GML could be a beneficial additive to cow's milk and infant formula.

"Our findings demonstrate that high levels of GML are unique to human breast milk and strongly inhibit growth of pathogenic bacteria," said Donald Leung, MD, PhD, professor of pediatrics at National Jewish Health and senior author on a paper in *Scientific Reports.*

‘While antibiotics can fight bacterial infections in infants, they kill the beneficial bacteria along with the pathogenic ones,” said Patrick Schlievert, PhD, professor of microbiology and immunology at the University of Iowa Carver College of Medicine and first author on the Scientific Reports paper. “GML is much more selective, fighting only the pathogenic bacteria while allowing beneficial species to thrive. We think GML holds great promise as a potential additive to cows’ milk and infant formula that could promote the health of babies around the world.”

After determining that human breast milk contains much higher levels of GML than does cows’ milk, the researchers showed that human breast milk inhibits the growth of the pathogenic bacteria Staphylococcus aureus, Bacillus subtilis and Clostridium perfringens, while neither cows’ milk nor infant formula had any effect. Human breast milk did not inhibit the growth of the beneficial bacteria Enterococcus faecilis. Babies fed on human breast milk have high levels of beneficial bifidobacteria, lactobacilli and enterococci bacterial species.

When researchers remove the GML from human breast milk, it lost its antimicrobial activity against S. aureus. When they added GML to cows’ milk, **it became antimicrobial**.

The researchers also showed that GML inhibits inflammation in epithelial cells, which line the gut and other mucosal surfaces. Inflammation can damage epithelial cells and contribute to susceptibility to both bacterial and viral infections.

Drs. Schlievert and Leung have applied for a patent for the use of GML as a beneficial additive to cows’ milk and infant formula.

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Three forms of laurate (laurin) are known to exist; mono - di and trilaurate. They are glycerides formed from glyceride and lauric acid.

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0120280

“Skin and surgical infections due to *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Acinetobacter baumannii* are causes of patient morbidity and increased healthcare costs. These organisms grow planktonically and as biofilms, and many strains exhibit antibiotic resistance. This study examines the antibacterial and anti-biofilm activity of glycerol monolaurate (GML), as solubilized in a non-aqueous vehicle (5% GML Gel), as a novel, broadly-active topical antimicrobial. The FDA has designated GML as generally recognized as safe for human use, and the compound is commonly used in the cosmetic and food industries.”

Dilaurate glycol is also known as ethylene glycol; a hyperosmotic substance.

In theory, the laurates are natural antimicrobials that are biosimilar to apolactoferrin. With near certainty, their ability to provide cellular defenses is derived from autophagy with the antimicrobial attribute being derived from the interactions of the mono and trilaurate forms with dilaurate performing quantum reoccurrence[1] for the epithelial and endothelial defensive cell barriers in the body.

[1] Self-assembly in particle physics based on ionic polarity that creates enzymatic disassembly and reassembly of particles.