

Characterization of virgin coconut oil fermented using starter culture prepared with probiotic bacterial strain

ABSTRACT

Fermented Coconut Oil (FCO) stands out as a unique form of pure coconut oil, processed through fermentation with a starter culture. Primarily composed of medium-chain saturated fatty acids, it inherits the biological properties of coconut oil, extensively studied for its remarkable antibacterial potential. The high concentration of medium-chain fatty acids, particularly lauric acid and its monoglyceride derivative, monolaurin, endows FCO with potent antibacterial properties. This enables FCO to combat a range of pathogenic microorganisms effectively. This study investigated the antibacterial activity of FCO against cultured pathogens, including *Listeria monocitogenes*, *Bacillus cereus* and *Salmonella typhimurium*. The results revealed the ability of FCO to inhibit the growth of these pathogens. Regarding in vivo testing with mice, parameters such as weight gain, blood sugar, cholesterol, and triglyceride levels were assessed in blood serum. Histopathological examination of the spleen, liver, kidneys, and intestines did not reveal any adverse changes. However, mice infected with *Escherichia coli* and simultaneously given FCO showed focal necrosis in the liver due to *E. coli* infection. Observation of kidney tissue showed glomerular swelling and renal tubular epithelial necrosis in some groups, but did not appear in the control group. In particular, the group infected with *E. coli* and given FCO showed glomerular swelling and renal tubular epithelial cell necrosis. This shows the potential of FCO in reducing bacterial infections and highlights its impact on kidney health by preventing inflammation and necrosis in the kidneys.