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Qualitative Study of Human Milk Phytochemical Using Fourier Transform Infrared (FTIR)

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Structured Abstract

Background: Human milk offers physiologic benefits, promotes healthy growth, and protects infants from illnesses and infections. Breastfeeding mothers can transmit phytochemicals from their food to their milk, which may help their infants overcome oxidative stress. Despite the fact that a substantial number of phytochemicals have been discovered, a significant portion of phytochemicals remain unknown. This research aims to identify; 1) types of phytochemicals present, 2) investigate the differences between lactation stages and 3) compare them to other milk samples from literature search.

Methods: In this study, two reagents were used such as methanol and chloroform to extract phytochemicals from human milk samples. This study also utilizes Fourier Transform Infrared (FTIR) machine, Perkin Elmer, model Spectrum 400. The background and samples were scanned according to specific parameters; 4 scans per sample, wavenumber from 650cm^{-1} to 4000cm^{-1} and a resolution of 16.00.

Results: Results indicate that alcohol, phenol, water, fatty acid, carbonyl group, protein, ester and aliphatic chains of fatty acids, lactose, polysaccharide and carbohydrate were present in the human milk based on the wavenumber obtained. It was also observed that both extraction methods produce similar results.

Conclusion: In conclusion, several phytochemicals can be observed by their lactation stages and extraction methods.

Keywords: Phytochemical, FTIR, human milk

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