

Effect of Microwave-Assisted Extraction (MAE) on the Bioavailability of Flaxseed Lignans

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A microwave-assisted extraction (MAE) method was developed and optimized for the extraction of lignans (phytoestrogens) from flaxseed by use of screening and response surface methodologies. Microwave heating speeds up the hydrolysis process and releases the lignans from the flaxseed matrix as efficiently, and twenty times faster than for a conventional hydrolysis process. Before adapting the MAE process for the large scale extraction of lignans it is necessary to evaluate whether the microwave-flaxseed interaction affects the bioavailability of lignans. Plant lignans are converted to mammalian lignans by gut microflora in animals and humans. The mammalian lignans have been shown to offer protection against cancer, diabetes and cardiovascular diseases. Enzymatic treatments can be used for converting plant lignans to mammalian lignans. This study compares the levels of mammalian lignans obtained with enzymatic treatments after releasing the lignans from the flaxseed matrix by MAE and conventional hydrolysis.