Enzymatic Extract Fractionation of (*Capsicum Annuum*) Hot Chili Pepper through Supercritical Carbon Dioxide (SC-CO_2)

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ABSTRACT

Capsicum annuum or hot chili is very common in the Philippines as spice, many research studies were already conducted and many extraction methods were already done but no study fractionated the enzymatic extract of chili pepper. In this study, an enzymatic hot chili extract from DA-PIU was fractionated using the supercritical carbon dioxide to obtain different oil extracts in three different parameters, 10Megapascal (MPa), 20Megapascal (MPa) and 30Megapascal (MPa) at constant temperature at 40° Celsius. The highest oil yield is at 20MPa with an average of 3.15% followed by 10MPa with 2.05% and 30MPa at 1.02%, all extracts are in triplicates. 10MPa oil sample was subjected to gas chromatography- mass spectrometry (GC-MS) analysis and found twenty eight compounds in which palmitic acid and capsaicin were the major compounds. For fatty acid profiling, pure crude enzymatic, 20MPa and 30MPa sample was subjected to gas chromatography (GC) at DOST-ITDI and was compared. Essential fatty acid linoleic (C18:2) was highest in pure crude enzymatic, while lauric (C12) was consistently highest for 20MPa and 30MPa in terms of weight by weight. Comparing the fatty acid profile, two fatty acid was not found in pure crude and present in 20MPa and 30MPa namely undecanoic (C11) and tridacanoic (C13), while one fatty acid was found in pure crude and was not present in 20 and 30 MPa namely cis-11, 14-eicosadienoic (C20:2). Cis 13, 16- docosadienoic (C22:2) AND CIS- 4, 7, 10, 13, 16, 19- docosahexanoic (C22:6) were only found in 30MPa sample only.

Keywords**:** supercritical carbon dioxide fractionation, enzymatic, gas chromatography, mass spectrometry fatty acid profiling