

**Impact Of Pulsed Electric Field Pretreatment On Yield And Quality Of Lipid  
Extracted From Cephalothorax Of Pacific White Shrimp (*Litopenaeus Vannamei*)  
By Ultrasound Assisted Process**

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**Abstract**

Impacts of pulsed electric field (PEF) pretreatment with different electric field strengths (4, 8, 12 and 16 kVcm<sup>-1</sup>) and pulse numbers (120, 160, 200 and 240) on extraction yield of lipid and cell disintegration index (Zc) of Pacific white shrimp cephalothorax were examined. PEF treated samples were subsequently subjected to lipid extraction using ultrasonic assisted extraction (UAE) process at ultrasonic amplitude of 91.2 microns for 25 min in continuous mode. Samples with PEF pretreatment and subjected to UAE rendered the highest lipid yield (30.34% dry basis). PEF pretreatment resulted in suppression of lipid oxidation as affirmed by the decreases in peroxide value (PV) and thiobarbituric acid reactive substances (TBARS). Lipid from PEF pretreated samples had higher content of PUFAs as well as carotenoids, which included astaxanthin, astaxanthin monoester, astaxanthin diester, canthaxanthin and  $\beta$ -carotene. Overall, PEF was a promising pretreatment to increase the yield and maintain the quality of lipid extracted from cephalothorax using UAE.

**Keywords:** *Pulse electric field, cell disintegration index, ultrasonic assisted extraction, carotenoid, lipid oxidation.*