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Development of Food Materials from Seafood Processing Effluents

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Various processing by-products such as seafood processing cooker effluent (SPCE), flowed out of seafood plants in Korea. However, almost of them have been discarded without suitable application methods. And these discarded SPCE might causes of marine environmental pollution and waste in potential food resources. Therefore, it is necessary to decrease these problems through the development of valuable products from SPCE. The objective of this study is to evaluate processing quality in order to establish basic research for the development of new flavoring agent from six SPCE, including blue mussel cooker effluent (MCE), oyster cooker effluent (OCE), cockle shell cooker effluent (CCE), squid cooker effluent (SCE) anchovy cooker effluents (ACE) and oyster shucking water (OSW). Moisture was more than 95% in all materials except for ACE (93.02%). The contents of ash in OSW (1.43%) and ACE (5.53%) were higher than those of the others, and same trend appeared in salinities of those. The content of amino-N in SCE was the highest with 142.63 mg/100 g, and those in CCE, MCE and OCE were followed in that order, whereas those in OSW and ACE were less than 35 mg/100 g. In ATP related compounds, MCE had the highest AMP content as 36.98 mg/100 g, and followed by CCE and OCE in that order. IMP was detected in the highest amount (14.65 mg/ 100g) in ACE. In non-volatile organic acids, 2 acids, succinic acid and lactic acid were in the higher amounts in MCE and ACE, respectively. Citric acid was detected in all materials, and it showed especially high level in OCE, CCE and SCE. However, 3 acids, oxalic, malonic and fumaric acid were detected in very low amounts. In total free amino acids content, OCE had the highest content (8,252.86 mg/100g) among all materials, and MCE, OSW, CCE, SCE and ACE were followed in that order. Free amino acids having high content (>100 mg/100 g) in most materials were phosphoethanolamine, asparagine, glutamic acid, glycine, alanine, isoleucine, tyrosine and lysine. Two amino acids, taurine and glutamic acid, known to have functional properties were only detected on high level in ACE.

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LLCE 방법을 이용한 한국산 초피의 휘발성 향기성분 분석

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초피는 한국, 일본, 중국 등에서 자생하는 운향과로 5월-6월에 꽃이 피고 9월에 열매를 맺으며 일본에서 뿐 아니라 한국에서도 오래전부터 향신료와 약용으로 이용되어왔다. 그리고 최근에는 초피와 같은 향신료가 음식에 향미 부여 이외에 항균작용을 가지고 있다고 보고되고 있다. 한편 초피의 향기성분에 대한 연구도 많이 발표되었으나, 식품 향의 추출시 추출조건(열처리 정도)에 따라 휘발성 향기성분의 조성이 많이 달라지는 문제점이 있었다 따라서 본 연구에서는 식품 향신료로서 사용빈도가 높은 초피(울산지역에서 자생하는 것을 채집하여 시료로 함)를 비가열 추출방식인 LLCE (liquid/liquid continuous extraction)법에 의해 휘발성 향기성분을 추출하였고 GC 및 GC/MSD로 분석 및 동정하여 선행연구의 결과와 비교 검토하였다. 총 33개의 향기성분이 분석 및 동정되었는데 이는 terpene류(14종), ester류(5종), aldehyde(1종), ketone류(2종), alcohol류(6종), acid(1종) 및 기타 화합물류(4종)등으로 구성되어 있었다. 이 중 함량 면에서는 terpene류 화합물이 가장 많았으며 전체적으로는 β -phellandrene(16,472.2 μ g/g), ethanol(1,0816.56 μ g/g), limonene(5,040.01 μ g/g), geranyl acetate(4,121.95 μ g/g), myrcene(3,229.67 μ g/g), citronellal(1,912.21 μ g/g) 등의 순서대로 함량이 높았다. 이는 선행연구에서 밝혀진 것과 같이 열분해로 인해 생성된 terpene유도체인 terpene alcohol, monoterpene 등이 주류인 것과는 다른 결과를 나타내었다.