Proximate, Chemical and Amino acid Composition of Oven Dried Clam (Merceneria m.), Whelk(Thias c.), Oyster (Crassostrea g.) And Periwinkle(Tympanotonus f.) Meat - Ebasi Okoya Johnnie- River State University, Port Harcourt, Nigeria

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Abstract

The proximate, chemical and amino acid composition of four oven dried shell fish meat samples were analyzed, Clam (Mercenaria mercenaria), Whelk (Thias coronata), Oyster (Crassostrea gasar), and Periwinkle (Tympanotonus fuscatus). Results shows that the Whelk has the highest moisture content of 13.96±0.01, followed by oyster 8.99±0.00, clam 8.98±0.01 and periwinkle 6.50±0.4. The protein content of periwinkle was the highest with a protein content of 70.42±0.03, followed by oyster 64.70±0.00, whelk 47.3±0.03, and clam 46.90±0.00 was the least. Ash content was highest in whelk 5.62±0.00, followed by clam 5.07±0.03, oyster 4.23±0.00 and the least periwinkle 3.38±0.01. The fat content of oyster was the highest with 10.60±0.00, followed by clam 10.07±0.03, whelk 9.20±0.00 and periwinkle 4.76±0.01 the least. Whelk contains highest crude fiber content 10.45±0.01, followed by clam 10.07±0.03, whelk 9.20±0.00, and periwinkle 3.56±0.01. The calcium content was highest in oyster 580±0.000g/100g sample and the least clam 101±0.000mg. Selenium was highest in clam 40±0.000mg and lowest in oyster 0.50±0.014mg. Oyster contains the highest levels of phosphorus 200±0.000mg and the least whelk 110±0.000mg. Periwinkle contains the highest level of Magnesium 150±0.0.000mg and the least clam 40±0.000mg. Oyster contains the highest level of Zinc 100±0.000mg, the least clam 70±0.000mg. Clam contains the highest level of Iron 330±0.000mg and the least periwinkle 183.10±0.071mg. The highest level of sodium was found in oyster 590±0.000mg and lowest clam 150±1.414mg. The mineral content of the four shell fish however differ significantly from each other at the ($P<0.05$). All the four shell fish contains all the essential and non-essential amino acids, they however differ significantly from each other at ($P<0.05$). The total amino acid values was highest in oyster with total amino acid value of 86.05±0.071, followed by whelk with total amino acid values of 83.02±0.000, clam with total amino acid values of 82.22±0.014 and the least is periwinkle with total amino acid values of 78.45±0.000. Oyster contains the highest total essential amino acid values of 42.06±0.000, followed by whelk with total essential amino acid values of 40.65±0.014, clam 39.90±0.014 and the least is periwinkle with total essential amino acid values of 35.16±0.014.

Pilot-scale brewing trials of a 12°P pale lager beer were conducted to look at the effect of a modified dose of hop and malt polyphenols on haze, flavour quality, and stability. Results confirmed that malt polyphenols, and particularly hop polyphenols, in the course of wort boiling, improved reducing activity values and the carbonyl content in fresh and stored beers. Hop polyphenols significantly increased reducing activity and decreased the formation of carbonyls (TBA value) in fresh and stored beer. Reduced content of malt polyphenols, combined with the use of hop CO2 extract, caused an increase in the TBA value in beer. PVPP stabilized beers tended to be lower in reducing activity. Both malt and hop polyphenols affected the intensity of “harsh taste” in fresh beers and a significant influence from PVPP stabilization of beer was not observed. The staling degree of forced-aged beers depended on the polyphenol content in the brewhouse. Both hop and malt polyphenols had a positive impact on flavour stability. PVPP treatment of beer had a positive effect on the flavour stability of heat-aged beers. Polyphenols, especially hop polyphenols, slowed down flavour deterioration during the nine month storage period, but the primary effect was seen during the first four months of storage. Storage trials did not show any unambiguous effects for PVPP stabilization on beer flavour stability. Results confirmed the negative impact of malt and hop polyphenols on haze stability, and PVPP stabilization minimized differences in shelf life prediction values between beers prepared with the modified dose of polyphenols.

Qualitative and quantitative data on 383 polyphenol metabolites as described in 424 human and animal intervention studies were systematically analyzed. Of these metabolites, 301 were identified without prior enzymatic hydrolysis of biofluids, and included glucuronide and sulfate esters, glycosides, aglycones, and O-methyl ethers. Around one-third of these compounds are also known as food constituents and corresponded to polyphenols absorbed without further metabolism. Many ring-cleavage metabolites formed by gut microbiota were noted, mostly derived from hydroxycinnamates, flavanols, and flavonols.

Bottom Note: *This work is partly presented at 3oth World Congress on Food and Beverages in July 26-27, 2021*

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