

## Proximate and Fatty Acid Composition of Hot-Smoked South African Black Mussel (*Choromytilus meridionalis*)

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### Abstract

The demand for seafood production has increased over the years due to the growth in the human population. In addition, the increased seafood demand has led to a concerning decline in global fish stocks which may leave large groups of people at risk of nutrient deficiencies in the years to come. To satisfy the demand, there has been a growing need to explore underutilized aquaculture seafood species such as *Choromytilus meridionalis* (black mussel) as an alternative to producing cheap value-added products. The black mussel has, however, not gained acceptance in the market due to its unusually dark brown colour. Thus, there is limited information on the mussels' nutritional information. Therefore, this research aimed to investigate the proximate and fatty acid (FA) composition of the mussel, as well as the effect of hot smoking on these compositions. The mussels were smoked at 80 for 15 minutes. The moisture, protein, ash, total lipid, and carbohydrates content observed for the raw samples were  $72.76 \pm 2.10\%$ ,  $9.79 \pm 1.23\%$ ,  $1.60 \pm 0.13\%$ ,  $4.00 \pm 0.47\%$  and  $11.99 \pm 1.80\%$ , respectively. The moisture content in the smoked samples decreased significantly ( $P < 0.05$ ) to  $58.98 \pm 2.64\%$ . Meanwhile, the protein, ash, total lipid, and carbohydrates content showed a significant increase ( $13.87 \pm 1.03\%$ ,  $3.17 \pm 0.70\%$ ,  $5.84 \pm 0.28\%$  and  $17.83 \pm 1.80\%$ , respectively). The sum of all saturated fatty acids (SFA) identified for raw samples was  $52.51 \pm 1.72\%$ , followed by polyunsaturated fatty acids (PUFA),  $31.15 \pm 1.32\%$  and monounsaturated fatty acids (MUFA),  $15.62 \pm 1.58\%$ . The SFA in the smoked samples significantly ( $P < 0.05$ ) decreased to  $44.90 \pm 2.02\%$ , while the PUFA increased to  $37.70 \pm 1.06\%$ . The MUFA increased to  $16.23 \pm 1.47\%$ , however, it showed no significant difference ( $P > 0.05$ ). The omega-3 (n-3) and omega-6 (n-6) fatty acids made up  $24.34 \pm 1.09\%$  and  $6.81 \pm 0.52\%$  in raw samples and  $33.36 \pm 1.23\%$  and  $4.34 \pm 0.61\%$  in smoked samples, respectively. The results of the study showed that mussel is a valuable food source with a high protein content and a well-balanced fatty acid composition. Additionally, the mussel raw and smoked is rich in omega-3 essential fatty acids and may therefore be considered an excellent functional food option for a healthy human diet.