

# Macro and microelements in soft tissues and shells of South African mussels: from consumption risks to regional patterns

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Neutron activation analysis performed at the REGATA facility of the reactor IBR-2 was used for determination of macro- and microelements in soft tissues and shells of 12 sets of mussels from the South African coastal zone. The method fits well for determination of specific groups of elements, which allows estimation of the significance of terrigenous and anthropogenic factors, found by key element-markers. Moreover, the neutron activation analysis could be useful for the analysis of threshold levels of elements in the meat of mussels in the study of risks of their consumption by population.

Wild and farmed South African mussels in coastal zone grow under the constant pressure of anthropogenic loadings. The mussels from the key zone of our study in Saldanha Bay (West Coast of South Africa) undergo influences of natural storms and tidal activities and could accumulate the suspended material from sources of pollution in the harbor. In previous biomonitoring studies (Bezuidenhout et al., 2020) it was found that the levels of trace elements, which indicate pollution in mussels collected at the farms and relatively pristine areas decreased for the last decade.

Regional patterns could be revealed by analysis of ranges of specific groups of elements. According to our study (Nekhoroshkov et al., 2021), the high concentrations of the elements of terrigenous origin, Al, Sc, Ti, V, Cr, Mn, Fe, Co, Th, U, in soft tissues of mussels collected from the East Coast of South Africa could be associated with the climatic features of the subtropical zone.

At the same time, the soft tissue of mussels could be used as a food source, especially in rural areas. Based on our study (Nekhoroshkov et al., 2021) the levels of Al, Cr, As, and I can increase the health risk when the consumption of mussel meat exceeds 250 g/week per person.

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## References

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