Snow Crab and Northern Shrimp Aeroallergens and Toxic Gases in Holds and on Decks of Newfoundland Coastal Fleet Fishing Vessels

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Sampling platform and targeted locations in NL

VRAE and weather station

ChemComb 47mm Teflon filter
<table>
<thead>
<tr>
<th>#</th>
<th>L</th>
<th>W</th>
<th>D</th>
<th>Year Built</th>
<th>Holds</th>
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<th>Vessel Crew Size</th>
<th>Characteristics of Trip Catch</th>
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N= no, NR = not recorded, SCTM = Snow Crab Tropomyosin, LOQ: lower limit of quantification
Toxic Gas Detection

FV-001, FV-002, FV-003, FV-004, FV-005, FV-007, FV-008, FV-009

Sampling duration (hr)

O₂ (%)
Snow crab MS profiling for the pool of filter extract

![Graph showing MS profiling with peaks for different proteins](image_url)

- **Tropomyosin**
- **Actin**
- **Arginine kinase**
- **Troponin**
**Average of 6 days**

- **d3-SCAK**: 7.10
- **SCAK**: 7.14
- **d9-SCTM**: 7.23
- **SCTM**: 7.28
Northern Shrimp TM

SCTM concentration (pg/m³)

Vessel #

Deck
Hold

0 100 200 300 400

7 9
Conclusion

- Mass spectrometry strategy has been successfully used for novel allergen discovery

- Tropomyosin and arginine kinase are the major crustacean aeroallergens

- Aeroallergen levels accurately determined in workplaces environment using mass spectrometry

- The proteomics quantitation approach can be utilized to study different aeroallergens simultaneously

- Arginine kinase has been reported for the first time to be aeroallergen with significantly high activity levels
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