

# MELANIN DEPOSITION IN SALMON FILLETS

## Frequently asked questions

Dark discoloration of salmon fillets is mainly due to the deposition of melanin pigments. The discoloration may have different manifestations, from localized spots to more diffuse and widespread melanisation on the fillet side or under the skin/subcutaneously. Dark stained fillets cannot be sold as high quality products and therefore represent a significant economic problem for the salmon farming and processing industry

## FAQ



## What is melanin?

- Melanin is a group of natural pigments found in most plants and animals
- Melanin is a powerful natural antioxidant
- In humans, melanin (eumelanin) is the primary determinant of skin colour

## What causes melanin deposition in salmon fillets?

- Melanin pigments are deposited as a response to tissue damages or local inflammatory conditions
- Melanin deposition is a natural part of a fish's immune system
- Dark discoloration of salmon fillets is mainly due to melanin deposition, but dark spots can also contain blood pigments and scar tissue or a combination of melanin, blood and scar tissue.
- The causality is complex, and not related to one single cause.

## Is it safe to consume fillets with melanin deposits

- Melanin is a safe and natural antioxidant
- Melanin can be used as a natural antioxidant in the food, cosmetic and pharmaceutical industries
- Dark pigments in various foods, such as caviar, are melanins

The information given in the FAQ is derived by the partners in the FHF project «Dark spots in salmon fillets. Causes and preventive measures»

For further information, please contact

Turid Mørkøre e-mail [turid.morkore@nofima.no](mailto:turid.morkore@nofima.no) or Kristian Prytz e-mail [kristian.prytz@fhf.no](mailto:kristian.prytz@fhf.no)

## Occurrence of melanin spots in salmon fillets

- Approximately 12% of Norwegian salmon fillets have lightly stained spots smaller than 3cm in diameter and 2% of the fillets have darker spots larger than 3cm on average.
- Most spots (70%) are located in the front part of the abdomen
- Dark spots are also observed in wild living salmon, hence it is not likely that the phenomenon will disappear completely

## What is being done to reduce the presence of dark fillet spots

- The Norwegian Seafood Research Fund (FHF), on behalf of the farming industry, has supported research on dark fillet spots since 2008 to reveal causes, provide reliable statistics and to define measures to reduce the problem. The research within this area was intensified in 2012, involving several industrial stakeholders and research communities.
- Reliable statistics require good, consistent, continuous and comprehensive recording of dark fillet spots. Therefore unified registrations at filleting plants along the Norwegian coast have been developed and implemented. Registrations of frequency and severity together with background data (genetics, vaccines/fish health, feed, rearing, harvesting etc.) is collected in a database to provide reliable and updated statistics. Information on fish origin is used to search for causes to the problem. However, such an epidemiological approach requires patience as the results evolve on a long-term basis. Updated statistics on the frequency of dark spots are published continuously.
- Specific ongoing research projects (apart from the registrations/ epidemiological study)
  - Vaccine and vaccination
  - Feed composition
  - Environmental rearing conditions
  - The importance of physical trauma and stress
  - In depth characterization of fillets with dark pigmentation to improve our ability to define causes

*The information given in the FAQ is derived by the partners in the FHF project «Dark spots in salmon fillets. Causes and preventive measures»*

*For further information, please contact*

*Turid Mørkøre e-mail [turid.morkore@nofima.no](mailto:turid.morkore@nofima.no) or Kristian Prytz e-mail [kristian.prytz@fhf.no](mailto:kristian.prytz@fhf.no)*



Norges veterinærhøgskole



Veterinærinstituttet  
National Veterinary Institute

