

Contact urticaria from mustard in fish-stick production

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At a major fish factory in northern Norway, workers employed in fish-stick and fillet production participated in a survey on skin diseases. 122 (80.1%) of the workers in the fish-stick section responded, but only 60.7% of the fillet workers. Clinical examination and patch testing revealed 16 cases of occupational dermatitis among workers in fish stick production, 3 of whom had contact urticaria from mustard and 8 from fish. There were only found 6 cases of occupational dermatitis among fillet workers; 3 reacted to fish and 3 had irritant contact dermatitis. Working conditions are described for both locations. A greater exposure to irritants may in part explain the 10.7% occupational dermatitis in the fish-stick section compared to only 3.5% in the fillet section.

Key words: Contact urticaria - mustard - fish stick production - occupational.

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Several production workers at a major fish-stick factory complained of irritant reactions on the skin and of the upper airways and eyes. Some developed an eczematous reaction on the hands, arms and face. In most cases, it improved or disappeared during leave from work or after transfer to another part of the factory where they were only exposed to fish. This investigation is part of a survey of occupational contact dermatitis among workers in the fish and shrimp industry in northern Norway.

Material and Methods

Initially, a questionnaire was distributed to 150 workers employed in fish-stick production, 172 in fillet production and 60 workers from other parts of the plant. The following questions were asked

Do you have skin disease of the hands?
If yes, is it due to provocation at work?
Do you improve or get well on leave from work?

If yes, please state how long it takes: Less than 1 week, 1-2 weeks or 2-4 weeks?

Information was also obtained of previous or present atopic disease of the subjects, and of first degree relatives, age, and years of employment. Finally, they were offered free consultation by a dermatologist, if desired.

Working conditions were inspected, an inventory was taken of possible irritants and samples were taken of the major sorts of fish in the production unit (cod, coalfish, haddock) and of the ingredients used in flavouring fish-stick production.

All workers accepting a consultation underwent a clinical examination. When contact dermatitis was diagnosed, patch testing was performed with the European standard series, supplemented with 10% aqueous solution of the hand cleaning agent (Manuvo from Henkel, Oslo, Norway), cod extract (Allergolog Lab., Copenhagen, Denmark) and the flavour ingredients for fish-stick production in pet. (2% of each). Prick testing for immediate hypersensitivity was performed using cod extract, fish (as is) and the flavour ingredients (as is).

Table 1. Data on fillet and fish-stick production workers

	No workers	F/M	Skin disease	Responders	Atopy	Average age (years)	Average employment (years)
fillet	172	157/15	14	102 (60.7%)	24.6%	29.8	5.7
fish-stick	150	126/24	29	122 (80.1%)	29.3%	30.3	6.1

Work Process

Almost 90% of the employees were young women. The workers on fish-stick production responded to a greater extent than those in fillet production and the frequency of skin problems was twice as high (Table 1).

Protective rubber gloves might be worn by most workers. However, they only received 1 free pair a month. Emollients were permitted, but were absent at all wash basins.

Fish-stick production

Deep frozen blocks of fillets were cut at the start of the line, spread in lines on large plates, and a flour-flavour mixture added automatically before light frying. At the end of the line, the still frozen sticks were packed. The flour-flavour mixture was blended in a large container, and poured into bags which were transported to the fry. In spite of ventilation, workers complained of air pollution at both these sites.

Fillet production

This was well automated as the skin and the main bones were removed automatically. The production workers were responsible for cutting fillets into appropriate nice pieces, and for removal of smaller bones. Gloves were not allowed for the latter operation.

Results

Contact urticaria

3 fish-stick workers had immediate reactions to mustard, 2 of them also to fish. An atopic disposition was present in all 3; 1 had atopic dermatitis as a child, and the others a history

of atopic disease in first degree relatives. 6 reacted only to fish.

Among the fillet workers, there were only 3 cases of reactions to fish. Atopic disposition was present in 7 of the 11 with reactions to fish. The workers with contact urticaria had only been employed for 2.3 years on average. The average age of this group (26.9 years) was lower than in the total material.

Epicutaneous testing

Surprisingly, we found no case of allergy to rubber accelerators, 6 women reacted to nickel, and single positive tests were found to colophony, wool alcohols, fragrance mix and balsam of Peru.

Occupational dermatitis

The 16 fish-stick workers were notified to the national authorities on occupational diseases. In addition to 9 workers with contact urticaria, there were 7 cases of irritant contact dermatitis. Among fillet workers, we found only 6 cases of occupational dermatitis, 3 who reacted to fish and 3 with irritant reactions.

Sick leave due to hand dermatitis was rare: in only 5 workers of the total, 3 being an fish-stick production. However, several had a history of sick leave for weeks to months due to musculoskeletal disease, during which their hand dermatitis went into remission.

Discussion

Reports on immediate reactions to mustard are rare (1, 2). Our findings suggest that they are probably overlooked as they were present in 3 of 16 individuals with occupational dermatitis and a history of exposure to mustard.

However, we found fish reactions to be more common; the explanation is probably the massive exposure to fish in a wet environment.

Atopic disposition was present in 8 of 12 workers with protein contact reactions. Maibach (3) originally reported this type of reaction as being atopic. However, Hjorth & Roed-Petersen (4) found protein contact dermatitis to occur commonly in non-atopics. Veien et al. (5) recently described positive scratch tests to 43 of 73 suspected food items and a positive RAST test to 45 of 52 foods in 25 cases of protein contact dermatitis.

The average time of employment, 2.3 years, was notably lower among the workers with protein contact reactions than the rest. This suggests a frequent change of occupation because of skin problems. The fish industry is almost the only possible employer of women in Northern Norway. When occupational problems arise, one solution may be to move to the southern part of Norway.

Although we found an atopic disposition to be more common among fish-stick workers (29.3%) than among fillet workers (24.6%), this cannot explain a 3-fold higher frequency of occupational skin problem. A greater awareness of possible harmful conditions may have prompted a higher response among fish-

stick workers. Adverse effects of contact with frozen fillets, exposure to dust, and mechanical irritation from fish-sticks and cardboard boxes for packing may contribute to a higher incidence of skin problems in fish-stick production than in fillet production. In other words, the summation of irritant factors is far greater in the fish-stick section.

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