ABSTRACT SUBMISSION

Title: The Danish Pesticide Monitoring Programme 2004-2011: Assessment of the cumulative exposure of the Danish population.

Abstract No. 0033

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Abstract

National pesticide monitoring data from the period 2044-2011 has been used as the basis for assessment of cumulative dietary exposure of the Danish population to pesticide residues by using the Hazard Index method.

The dietary exposure to a pesticide residue in a given food was estimated by multiplying the residue level in the food by the amount of that food consumed. The total dietary exposure to a given pesticide was estimated by summing the exposure for all food items containing residues of that pesticide. The exposure for each food item was calculated relative to the body weight.

Consumption data were obtained from the Danish National Dietary Survey 2003-2008. This survey included 2700 participants and was presumed to be representative for the Danish population. Exposure for several consumer groups was estimated from the average consumption for the groups.

The data comprised results from approximately 14 000 samples from 130 different commodity types, primarily fresh fruit and vegetables. Residues from approximately 160 pesticides were included. Contribution from bread was estimated from cereal grain and flour using general receipts for bread making. General processing factors was used for a range of commodities normally consumed without peel.

The average residue level of each pesticide was estimated using different models for the contribution from residues below the quantification limit, LOQ. The average level was estimated separately for Danish samples and samples of foreign origin.

One model assumed that the content for samples with results below LOQ could be equalled to zero, while a second model assumed ½LOQ for these. This second model resulted in some cases in unrealistic high values caused by very few detections amongst a high number of samples. A third model assumed that the contribution from the non-detected residues could be reduced compared to the second model by limiting the difference to results from model 1 by a factor of 25. This model was based on the distribution of the ratio between results from the two first models and the frequency of detected residues for each pesticide, commodity and origin.

For each pesticide a Hazard Quotient was calculated by dividing the daily exposure according to the consumption pattern of the consumer group in question with the Acceptable Daily Intake for that pesticide.

The Hazard Index for the consumer group was calculated by summing the Hazard Quotients for all pesticides.

The results showed that ten commodities were responsible for approximately 80% of the exposure from an average diet.

While the second model showed critical results for the consumer group of children, exposure was at an acceptable level using the third (and first) model. Exposure was also acceptable for consumers eating more than 550 g of fruit and vegetables per day.

Permission Yes

Approval Confirm

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