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Feeding stuffs and MRL setting in animal products

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MRL setting in livestock

- Regulation 396/2005 covers both food and feed
- At the moment feeding items included are:
 - Feeding items that also are eaten by humans
 - E.g. grain, potatoes, sugar beet
 - But not grass, straw, pulp from fruits, fodder beet.....
 - Meeting EU about MRLs for feeding stuffs; e.g. which commodities should be included



MRL setting in livestock

- Only perform calculations if residues in feed is > 0.1 mg/kg
- MRLs are set on the residue definition for animal products
 - Also what to determine in monitoring
 - E.g. residue definition for maleic hydrazide in milk is:
 - Maleic hydrazide and conjugates expressed as maleic hydrazide
 - Need to have acid treatment included
 - For other animal products: maleic hydrazide



MRL setting in livestock

- Calculate the expected animal intake with relevant feeding items
 - All values except residues are given by EU table from a guideline
 - Advantage: Same feeding table used in all countries
- Using highest amount or MRL in feed



MRL setting in livestock

- A feeding study should be performed:
 - Animals are feed the relevant substance at different levels
 - The content in milk, egg, liver, kidney, fat and muscle are determined
- Compare the expected intake with the results found in feeding studies in edible commodities
- On the background the MRLs are set

	% Dry Matter (DM)	Chicken	Dairy Cattle	Beef Cattle	Pig
Body weight		1.9 kg	550 kg	350 kg	75 kg
Daily Maximum Feed (Dry Matter) DM		120 g	20 kg	15 kg	3 kg
Maximum Percentage		% DM	% DM	% DM	% DM
Group Crop/ Commodity					
I Green Forage (include. Hay)					
Grasses	20	-	100	100	-
Alfalfa/Clover	20	-	40	40	15
Forage Rape	14	-	-	35	15
Kale/Cabbage	14	5	35	35	15
Sugar Beet leaves and tops	16	-	30	30	25
Silage (Clover, Grasses (—))	20	-	100	100	15
Fruit Pomace (Apples, Citrus)	23	-	10	30	-
Hay	85	-	100	100	15
II Grains					
Grains except Maize	86	70	40	80	80
Maize	86	70	30	30	40
Bran (Wheat and Rye)	89	15	20	20	20
III Straws (cereals)	86	—	20	50	-
IV Pulses	86	30	20	20	40
V Root and Tubers (e.g. Potatoes, Swede/Turnip/ Sugar and Fodder Beet)					
(e.g. Potatoes,	15	20	30	60	60
Swede/Turnip/	10	20	30	60	60
Sugar and Fodder Beet	20	20	30	60	60
VI Oil Seed (Meal, Cake) (eg Soya bean, Peanuts, Rape seed, Sunflower seed, Linseed)	86	10	30	30	20



MRL setting in livestock

- Not necessary to have 100 % contribution to feed
- On the other hand IF contribution more than 100 % some of the feed consumptions are scaled down
- Only 1 commodity from each group



MRL setting in livestock

- Highest residue in in grain = 2 mg/kg
- Highest residue in straw = 13 mg/kg
- Highest residue in grape pomace = 0.36
- Dairy cattle: 4.11 mg/kg feed on dry weight basis
- Beef cattle: 9.89 mg/kg feed on dry weight basis



MRL setting in livestock

Matrix	Feeding dose 5.9 mg/kg (residue in mg/kg)	Feeding dose 20.2 mg/kg (residue in mg/kg)
Milk	< 0.02	0.05
Muscel	< 0.05	0.058
Fat	0.11	0.27
Liver	0.06	0.18
Kidney	0.07	0.24



MRL setting in livestock

- Use nearest feeding level to set the MRL
- MRLs:
 - Milk: 0.02 mg/kg
 - Meat: 0.01 mg/kg
 - $0.05 \times 9.89/5.9 = 0.08 \sim 0.1$
 - Fat: 0.2 mg/kg
 - $0.11 * 9.89/5.9 = 0.18 \sim 0.2$
 - Only set for fat soluble pesticides ($\sim K_{ow} > 3$)
 - Kidney and liver: 0.1 mg/kg
 - $0.07(0.06) \times 9.89/5.9$



MRL setting in livestock

- Do the same for poultry and maybe other animals
- If feeding studies and intake calculation show that there will be NO residues in animal products no MRLs are set
 - Example:
 - At feeding level 5.9 mg/kg feed all residue < LOQ;
 - Calculation of intake is 4.5 mg/kg feed
 - No MRLs
- With regulation 396/2005 many more specific animals are defined
 - E.g. horses, asses, mules, reptiles, snails



Risk assessment

- MRLs for animal products are included in the risk assessment
- New/other uses on commodities can give other MRLs in animal products
 - New risk assessment



Thank you for your attention