



# Current EU Antibiotic Maximum Residue Limits

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## Antibiotics in Food

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# Antibiotics in Food

## Aminoglycosides

| Molecule                                | Animal Species               | Commodity | MRL       |
|---|------------------------------|-----------|-----------|
| Dihydrostreptomycin / Streptomycin      | All ruminants, pigs, rabbits | Muscle    | 500 ppb   |
|   |                              | Fat       | 500 ppb   |
|   |                              | Liver     | 500 ppb   |
|   |                              | Kidney    | 1,000 ppb |
| Dihydrostreptomycin / Streptomycin      | All ruminants                | Milk      | 200 ppb   |
| Gentamicin (Sum of C1, C1a, C2 and C2a) | Cattle, pigs                 | Muscle    | 50 ppb    |
|   |                              | Fat       | 50 ppb    |
|   |                              | Liver     | 200 ppb   |
|   |                              | Kidney    | 750 ppb   |
| Gentamicin (Sum of C1, C1a, C2 and C2a) | Cattle                       | Milk      | 100 ppb   |
| Kanamycin A                             | All food                     | Muscle    | 100 ppb   |
|   |                              | Fat       | 100 ppb   |
|   |                              | Liver     | 600 ppb   |
|   |                              | Kidney    | 2,500 ppb |
| Neomycin B                              | All food                     | Milk      | 150 ppb   |
|   |                              | Muscle    | 500 ppb   |
|   |                              | Fat       | 500 ppb   |
|   |                              | Liver     | 500 ppb   |
|   |                              | Kidney    | 5,000 ppb |
| Spectinomycin                           | Sheep                        | Milk      | 1,500 ppb |
|   |                              | Muscle    | 500 ppb   |
|   |                              | Fat       | 300 ppb   |
|   |                              | Liver     | 500 ppb   |
|   |                              | Kidney    | 2,000 ppb |
| Spectinomycin                           | All other food               | Kidney    | 5,000 ppb |
|   |                              | Milk      | 200 ppb   |
|   |                              | Muscle    | 300 ppb   |
|   |                              | Fat       | 500 ppb   |
|   |                              | Liver     | 1,000 ppb |
| Streptomycin                            | All ruminants, pigs, rabbits | Kidney    | 5,000 ppb |
|   |                              | Milk      | 200 ppb   |
|   |                              | Muscle    | 500 ppb   |
|   |                              | Fat       | 500 ppb   |
| Streptomycin                            | All ruminants, pigs, rabbits | Liver     | 500 ppb   |
|   |                              | Kidney    | 1,000 ppb |
|   |                              | Fat       | 500 ppb   |
|   |                              | Muscle    | 500 ppb   |

## Ansamycins

| Molecule  | Animal Species | Commodity | MRL    |
|-----------|----------------|-----------|--------|
| Rifaximin | Cattle         | Milk      | 60 ppb |

MRL: Maximum Residue Limit



# Antibiotics in Food

## Beta-lactams

| Molecule                                 | Animal Species             | Commodity | MRL       |
|--|----------------------------|-----------|-----------|
| Amoxicillin                              | All food                   | Muscle    | 50 ppb    |
|  |                            | Fat       | 50 ppb    |
|  |                            | Liver     | 50 ppb    |
|  |                            | Kidney    | 50 ppb    |
|  |                            | Milk      | 4 ppb     |
| Ampicillin                               | All food                   | Muscle    | 50 ppb    |
|  |                            | Fat       | 50 ppb    |
|  |                            | Liver     | 50 ppb    |
|  |                            | Kidney    | 50 ppb    |
|  |                            | Milk      | 4 ppb     |
| Cefacetile                               | Cattle                     | Milk      | 125 ppb   |
| Cefalexin                                | Cattle                     | Muscle    | 200 ppb   |
|  |                            | Fat       | 200 ppb   |
|  |                            | Liver     | 200 ppb   |
|  |                            | Kidney    | 1,000 ppb |
|  |                            | Milk      | 100 ppb   |
| Cefalonium                               | Cattle                     | Milk      | 20 ppb    |
| Sum of cefapirin and desacetylcephapirin | Cattle                     | Muscle    | 50 ppb    |
|  |                            | Fat       | 50 ppb    |
|  |                            | Kidney    | 100 ppb   |
|  |                            | Milk      | 60 ppb    |
| Cefazolin                                | Cattle, sheep, goats       | Milk      | 50 ppb    |
| Cefoperazone                             | Cattle                     | Milk      | 50 ppb    |
| Cefquinome                               | Cattle, pigs, horse family | Muscle    | 50 ppb    |
|  |                            | Fat       | 50 ppb    |
|  |                            | Liver     | 100 ppb   |
|  |                            | Kidney    | 200 ppb   |
| Cefquinome                               | Cattle                     | Milk      | 20 ppb    |
| Ceftiofur                                | All mammalian food         | Muscle    | 1,000 ppb |
|  |                            | Fat       | 2,000 ppb |
|  |                            | Liver     | 2,000 ppb |
|  |                            | Kidney    | 6,000 ppb |
|  |                            | Milk      | 100 ppb   |
| Cloxacillin                              | All food                   | Muscle    | 300 ppb   |
|  |                            | Fat       | 300 ppb   |
|  |                            | Liver     | 300 ppb   |
|  |                            | Kidney    | 300 ppb   |
|  |                            | Milk      | 30 ppb    |
| Dicloxacillin                            | All food                   | Muscle    | 300 ppb   |
|  |                            | Fat       | 300 ppb   |
|  |                            | Liver     | 300 ppb   |
|  |                            | Kidney    | 300 ppb   |
|  |                            | Milk      | 30 ppb    |
| Nafcillin                                | All ruminants              | Muscle    | 300 ppb   |
|  |                            | Fat       | 300 ppb   |
|  |                            | Liver     | 300 ppb   |
|  |                            | Kidney    | 300 ppb   |
|  |                            | Milk      | 30 ppb    |

MRL: Maximum Residue Limit





## Antibiotics in Food

### Beta-lactams continued

| Molecule                | Animal Species     | Commodity | MRL     |
|-------------------------|--------------------|-----------|---------|
| Oxacillin               | All food           | Muscle    | 300 ppb |
|                         |                    | Fat       | 300 ppb |
|                         |                    | Liver     | 300 ppb |
|                         |                    | Kidney    | 300 ppb |
|                         |                    | Milk      | 30 ppb  |
| Benzylpenicillin        | All mammalian food | Muscle    | 50 ppb  |
|                         |                    | Fat       | 50 ppb  |
|                         |                    | Liver     | 50 ppb  |
|                         |                    | Kidney    | 50 ppb  |
|                         |                    | Milk      | 4 ppb   |
| Phenoxymethylpenicillin | Pigs               | Muscle    | 25 ppb  |
|                         |                    | Liver     | 25 ppb  |
|                         |                    | Kidney    | 25 ppb  |
| Phenoxymethylpenicillin | Poultry            | Muscle    | 25 ppb  |
|                         |                    | Skin      | 25 ppb  |
|                         |                    | Fat       | 25 ppb  |
|                         |                    | Liver     | 25 ppb  |
|                         |                    | Kidney    | 25 ppb  |

### Fluoroquinolones

| Molecule     | Animal Species                | Commodity    | MRL       |
|--------------|-------------------------------|--------------|-----------|
| Danofloxacin | Cattle, sheep, goats, poultry | Muscle       | 200 ppb   |
|              |                               | Fat          | 100 ppb   |
|              |                               | Liver        | 400 ppb   |
|              |                               | Kidney       | 400 ppb   |
| Danofloxacin | All other food                | Muscle       | 100 ppb   |
|              |                               | Fat          | 50 ppb    |
|              |                               | Liver        | 200 ppb   |
| Danofloxacin | Cattle, sheep, goats          | Milk         | 30 ppb    |
| Difloxacin   | Cattle, sheep, goats          | Muscle       | 400 ppb   |
|              |                               | Fat          | 100 ppb   |
|              |                               | Liver        | 1,400 ppb |
|              |                               | Kidney       | 800 ppb   |
| Difloxacin   | Pigs                          | Muscle       | 400 ppb   |
|              |                               | Skin and fat | 100 ppb   |
|              |                               | Liver        | 800 ppb   |
|              |                               | Kidney       | 800 ppb   |
| Difloxacin   | Poultry                       | Muscle       | 300 ppb   |
|              |                               | Skin and fat | 400 ppb   |
|              |                               | Liver        | 1,900 ppb |
|              |                               | Kidney       | 600 ppb   |

MRL: Maximum Residue Limit



# Antibiotics in Food

## Fluoroquinolones continued

| Molecule                              | Animal Species             | Commodity       | MRL       |
|---------------------------------------|----------------------------|-----------------|-----------|
| Difloxacin                            | All other food             | Muscle          | 300 ppb   |
|                                       |                            | Fat             | 100 ppb   |
|                                       |                            | Liver           | 800 ppb   |
|                                       |                            | Kidney          | 600 ppb   |
| Sum of enrofloxacin and ciprofloxacin | Cattle, sheep, goats       | Muscle          | 100 ppb   |
|                                       |                            | Fat             | 100 ppb   |
|                                       |                            | Liver           | 300 ppb   |
|                                       |                            | Kidney          | 200 ppb   |
|                                       |                            | Milk            | 100 ppb   |
| Sum of enrofloxacin and ciprofloxacin | Pigs, rabbits              | Muscle          | 100 ppb   |
|                                       |                            | Fat             | 100 ppb   |
|                                       |                            | Liver           | 200 ppb   |
|                                       |                            | Kidney          | 300 ppb   |
| Sum of enrofloxacin and ciprofloxacin | Poultry                    | Muscle          | 100 ppb   |
|                                       |                            | Skin and fat    | 100 ppb   |
|                                       |                            | Liver           | 200 ppb   |
|                                       |                            | Kidney          | 300 ppb   |
| Sum of enrofloxacin and ciprofloxacin | All other food             | Muscle          | 100 ppb   |
|                                       |                            | Fat             | 100 ppb   |
|                                       |                            | Liver           | 200 ppb   |
|                                       |                            | Kidney          | 200 ppb   |
| Flumequine                            | Cattle, sheep, goats, pigs | Muscle          | 200 ppb   |
|                                       |                            | Fat             | 300 ppb   |
|                                       |                            | Liver           | 500 ppb   |
|                                       |                            | Kidney          | 1,500 ppb |
| Flumequine                            | Cattle, sheep, goats       | Milk            | 50 ppb    |
| Flumequine                            | Poultry                    | Muscle          | 400 ppb   |
|                                       |                            | Skin and fat    | 250 ppb   |
|                                       |                            | Liver           | 800 ppb   |
|                                       |                            | Kidney          | 1,000 ppb |
| Flumequine                            | Fin fish                   | Muscle and skin | 600 ppb   |
| Flumequine                            | All other food             | Muscle          | 200 ppb   |
|                                       |                            | Fat             | 250 ppb   |
|                                       |                            | Liver           | 500 ppb   |
|                                       |                            | Kidney          | 1,000 ppb |
| Marbofloxacin                         | Cattle, pigs               | Muscle          | 150 ppb   |
|                                       |                            | Fat             | 50 ppb    |
|                                       |                            | Liver           | 150 ppb   |
|                                       |                            | Kidney          | 150 ppb   |
| Marbofloxacin                         | Cattle                     | Milk            | 75 ppb    |

MRL: Maximum Residue Limit





# Antibiotics in Food

## Macrolides

| Molecule                            | Animal Species | Commodity                           | MRL       |
|-------------------------------------|----------------|-------------------------------------|-----------|
| Erythromycin A                      | All food       | Muscle                              | 200 ppb   |
|                                     |                | Fat                                 | 200 ppb   |
|                                     |                | Liver                               | 200 ppb   |
|                                     |                | Kidney                              | 200 ppb   |
|                                     |                | Milk                                | 40 ppb    |
|                                     |                | Eggs                                | 150 ppb   |
| Lincomycin                          | All food       | Muscle                              | 100 ppb   |
|                                     |                | Fat                                 | 50 ppb    |
|                                     |                | Liver                               | 500 ppb   |
|                                     |                | Kidney                              | 1,500 ppb |
|                                     |                | Milk                                | 150 ppb   |
|                                     |                | Eggs                                | 50 ppb    |
| Novobiocin                          | Cattle         | Milk                                | 50 ppb    |
| Pirlimycin                          | Cattle         | Muscle                              | 100 ppb   |
|                                     |                | Fat                                 | 100 ppb   |
|                                     |                | Liver                               | 1,000 ppb |
|                                     |                | Kidney                              | 400 ppb   |
|                                     |                | Milk                                | 100 ppb   |
|                                     |                | Sum of spiramycin and neospiramycin | Cattle    |
| Fat                                 | 300 ppb        |                                     |           |
| Liver                               | 300 ppb        |                                     |           |
| Kidney                              | 300 ppb        |                                     |           |
| Milk                                | 200 ppb        |                                     |           |
| Sum of spiramycin and neospiramycin | Chicken        | Muscle                              | 200 ppb   |
|                                     |                | Skin and fat                        | 300 ppb   |
|                                     |                | Liver                               | 400 ppb   |
| Tilmicosin                          | Poultry        | Muscle                              | 75 ppb    |
|                                     |                | Skin and fat                        | 75 ppb    |
|                                     |                | Liver                               | 1,000 ppb |
|                                     |                | Kidney                              | 250 ppb   |
| Tilmicosin                          | All other food | Muscle                              | 50 ppb    |
|                                     |                | Fat                                 | 50 ppb    |
|                                     |                | Liver                               | 1,000 ppb |
|                                     |                | Kidney                              | 1,000 ppb |
|                                     |                | Milk                                | 50 ppb    |
| Tylosin A                           | All food       | Muscle                              | 100 ppb   |
|                                     |                | Fat                                 | 100 ppb   |
|                                     |                | Liver                               | 100 ppb   |
|                                     |                | Kidney                              | 100 ppb   |
|                                     |                | Milk                                | 50 ppb    |
|                                     |                | Eggs                                | 200 ppb   |

MRL: Maximum Residue Limit





# Antibiotics in Food

## Nitrofurans

| Molecule                          | Animal Species | Commodity            | MRL   | MRPL  |
|-----------------------------------|----------------|----------------------|-------|-------|
| Nitrofurans (AHD, SEM, AOZ, AMOZ) | Poultry        | Muscle               | 0 ppb | 1 ppb |
| Nitrofurans (AHD, SEM, AOZ, AMOZ) | All food       | Aquaculture products | 0 ppb | 1 ppb |

## Phenicol

| Molecule        | Animal Species | Commodity            | MRL   | MRPL    |
|-----------------|----------------|----------------------|-------|---------|
| Chloramphenicol | All food       | Muscle               | 0 ppb | 0.3 ppb |
|                 |                | Milk                 | 0 ppb | 0.3 ppb |
|                 |                | Eggs                 | 0 ppb | 0.3 ppb |
|                 |                | Urine                | 0 ppb | 0.3 ppb |
|                 |                | Aquaculture products | 0 ppb | 0.3 ppb |
|                 |                | Honey                | 0 ppb | 0.3 ppb |

## Pleuromutilin

| Molecule  | Animal Species | Commodity | MRL       |
|---|----------------|-----------|-----------|
| Tiamulin (Sum of metabolites that may be hydrolysed to 8- $\alpha$ -hydroxymutilin) | Pigs, rabbits  | Muscle    | 100 ppb   |
|   |                | Liver     | 500 ppb   |
| Tiamulin (Sum of metabolites that may be hydrolysed to 8- $\alpha$ -hydroxymutilin) | Chicken        | Muscle    | 100 ppb   |
|   |                | Skin      | 100 ppb   |
|   |                | Fat       | 100 ppb   |
|   |                | Liver     | 1,000 ppb |
| Tiamulin (Sum of metabolites that may be hydrolysed to 8- $\alpha$ -hydroxymutilin) | Turkey         | Muscle    | 100 ppb   |
|   |                | Skin      | 100 ppb   |
|   |                | Fat       | 100 ppb   |
|   |                | Liver     | 300 ppb   |
| Tiamulin  | Poultry        | Eggs      | 1,000 ppb |

MRL: Maximum Residue Limit  
MRPL: Maximum Residue Performance Limit





# Antibiotics in Food

## Polypeptides

| Molecule   | Animal Species | Commodity | MRL     |
|------------|----------------|-----------|---------|
| Colistin   | All food       | Muscle    | 150 ppb |
|            |                | Fat       | 150 ppb |
|            |                | Liver     | 150 ppb |
|            |                | Kidney    | 200 ppb |
|            |                | Milk      | 50 ppb  |
|            |                | Eggs      | 300 ppb |
| Bacitracin | Cattle         | Milk      | 100 ppb |
| Bacitracin | Rabbits        | Muscle    | 150 ppb |
|            |                | Fat       | 150 ppb |
|            |                | Liver     | 150 ppb |
|            |                | Kidney    | 150 ppb |

## Sulfonamides

| Molecule     | Animal Species       | Commodity | MRL     |
|--------------|----------------------|-----------|---------|
| Sulfonamides | All food             | Muscle    | 100 ppb |
|              |                      | Fat       | 100 ppb |
|              |                      | Liver     | 100 ppb |
|              |                      | Kidney    | 100 ppb |
|              |                      | Milk      | 100 ppb |
| Sulfonamides | Cattle, sheep, goats | Milk      | 100 ppb |

MRL: Maximum Residue Limit



# Antibiotics in Food

## Tetracyclines

| Molecule  | Animal Species | Commodity    | MRL     |
|---|----------------|--------------|---------|
| Chlortetracycline<br>(Sum of parent drug and its 4 epimers) | All food       | Muscle       | 100 ppb |
|   |                | Liver        | 300 ppb |
|   |                | Kidney       | 600 ppb |
|   |                | Milk         | 100 ppb |
|   |                | Eggs         | 200 ppb |
| Doxycycline<br>(Sum of parent drug and its 4 epimers)       | Cattle         | Muscle       | 100 ppb |
|   |                | Liver        | 300 ppb |
|   |                | Kidney       | 600 ppb |
| Doxycycline<br>(Sum of parent drug and its 4 epimers)       | Pigs, poultry  | Muscle       | 100 ppb |
|   |                | Skin and fat | 300 ppb |
|   |                | Liver        | 300 ppb |
|   |                | Kidney       | 600 ppb |
| Oxytetracycline<br>(Sum of parent drug and its 4 epimers)   | All food       | Muscle       | 100 ppb |
|   |                | Liver        | 300 ppb |
|   |                | Kidney       | 600 ppb |
|   |                | Milk         | 100 ppb |
|   |                | Eggs         | 200 ppb |
| Tetracycline<br>(Sum of parent drug and its 4 epimers)      | All food       | Muscle       | 100 ppb |
|   |                | Liver        | 300 ppb |
|   |                | Kidney       | 600 ppb |
|   |                | Milk         | 100 ppb |
|   |                | Eggs         | 200 ppb |

## References

Commission Regulation (EU) No. 37/2010.

Commission Decision 2003/181.

MRL: Maximum Residue Limit



**R-Biopharm Rhône Ltd**  
Block 10 Todd Campus  
West of Scotland Science Park  
Acre Road, Glasgow G20 0XA  
Phone: +44 (0) 141 945 2924  
Fax: +44 (0) 141 945 2925  
[www.r-biopharm.com](http://www.r-biopharm.com)



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