

## **Results of official testing of specified feed additives (FY 2015)**

Specified feed additives mean the feed additives for which the standards are set in accordance with the provision of Article 3, paragraph 1 of the Law Concerning Safety Assurance and Quality Improvement of Feeds (Law No. 35 issued April 11, 1953; hereinafter referred to as “Feed Safety Law”) and which are the antibacterial preparations specified in Article 2, item 2 of the Order for Enforcement of the Law Concerning Safety Assurance and Quality Improvement of Feeds (Order No. 198 issued July 16, 1976). Only the specified feed additives with a certificate of passing the testing which the Food and Agricultural Materials Inspection Center (hereinafter referred to as “FAMIC”) conducts in accordance with the provisions of Article 5, paragraph 1 of the Feed Safety Law may be distributed; provided, however, that those manufactured by the manufacturers of specified feed additives registered under Article 7, paragraph 1 of the Feed Safety Law (hereinafter referred to as “registered manufacturers of specified feed additives”) on which the indication referred to in Article 16 paragraph 1 of the same Law is placed and those manufactured by the foreign manufacturers of specified feed additives registered under Article 21 paragraph 1 which the indication referred to the paragraph 2 of the same Article is placed on may be distributed.

The following report is the summary of the results of the specified feed additives passed the official testing, which are applied for at FAMIC in FY 2015. The quantity and others of the specified feed additives manufactured by the registered manufacturers of specified feed additives in FY 2015 are also reported. At the present time, there is no foreign registered manufacturer of specified feed additives.

### **1. Names of applicants and others**

Table 1 shows the names of applicants and others concerning the the specified feed additives passed the official testing in FY 2015.

Nine business entities (8 in the previous FY) applied the official testing of specified feed additives. The manufacturing forms and others of these business entities: two of them manufactured preparations from raw materials for manufacturing they imported, one of them manufactures preparations from raw materials for manufacturing or preparations it imported, four of them imported preparations, one of them manufactured preparations from raw materials for manufacturing they imported or from preparations they imported, and the other one manufactured preparations from raw materials for manufacturing they imported or imported preparations.

Twelve types of specified feed additives, corresponding to 20 brands, are applied for the testing in FY 2015 (11 types and 19 brands in the previous FY). The manufacturing of raw materials or preparations of 12 types of them except nosiheptide (feed grage) are dependent on foreign countries.

As for the import source countries of raw material for manufacturing or preparations: 1) China for zinc bacitracin (preparation), alkyltrimethylammonium calcium oxytetracycline (raw material for manufacturing), enramycin (raw material for manufacturing), nosiheptide (raw material for

manufacturing), and colistin sulfate (raw material for manufacturing), 2) the UK for avilamycin (preparation), 3) Singapore for chlortetracycline (preparation), 4) the USA for narasin (preparation) and tylosin phosphate (preparation), 5) Bulgaria for flavophospholipol (preparation) and monensin sodium (raw material for manufacturing), 6) China and Bulgaria for salinomycin sodium (raw material for manufacturing), and 7) Korea for colistin sulfate (preparation). The number of the import source countries was 6 (5 in the previous FY).

## **2. Number of the passed cases of the specified feed additives by type and others**

Table 2 shows the results of the number of the passed cases by type, the passed quantity, and the quantity converted from the actual quantity into potency of the specified feed additives in FYs 2013, 2014, and 2015. Designation of sedecamycin as a feed additive has been revoked in accordance with the amendment of the Ministerial Ordinance concerning the Ingredient Standards for Feed and Feed Additives (Ordinance of Ministry of Agriculture, Forestry and Fisheries No. 35, 1976) in February 6, 2014.

In FY 2015, 181 cases were passed. The passed quantity and the quantity converted from the actual quantity into potency were 786 tons and 88 tons (potency), respectively. The passed cases, the passed quantity, and the quantity converted from the actual quantity into potency were 100.6 %, 86.5 %, and 84.5 %, respectively, compared with the previous fiscal year.

The percentage of the specified feed additives in the total passed quantity by type was 36.7 %, which was the highest one, for salinomycin sodium (26.9 % in the previous FY), followed in descending order by 28.5 % for colistin sulfate (17.4 % in the previous FY), 16.7 % for narasin (34.9 % in the previous FY), 8.0 % for avilamycin (10.1 % in the previous FY), and 2.8 % for nosiheptide (1.3 % in the previous FY). As for the percentage of them in the total of which the quantity converted from the actual quantity into potency, the highest was 32.6 % for salinomycin sodium (23.4 % in the previous FY), followed in descending order by 25.3 % for colistin sulfate (15.1 % in the previous FY), 14.9 % for narasin (30.3 % in the previous FY), 14.2 % for avilamycin (17.5 % in the previous FY), and 6.2 % for tylosin phosphate (5.1 % in the previous FY).

Compared with the previous fiscal year, the testing-passed quantity and the quantity converted from the actual quantity into potency of alkyltrimethylammonium calcium oxytetracycline, chlortetracycline, colistin sulfate, enramycin, nosiheptide, salinomycin sodium, and tylosin phosphate increased, while those of zinc bacitracin, avilamycin, monensin sodium, and narasin decreased.

Flavophospholipol, which were not applied for testing in the previous fiscal year, was subjected to the testing. Lasalocid sodium since FY 2010, virginiamycin since FY 2008, semduramicin sodium since FY 2007, efrotomycin since FY 2005, and bicozamycin since FY 1999 have not been subjected to the testing, all of which were not also subjected to in FY 2015.

In addition, lasalocid sodium were not subjected to the testing, but were manufactured by the registered manufacturers of specified feed additives as shown in Table 5.

### **3. The number of the testing-passed cases of the specified feed additives by refining grade and feed grade and others**

The specified feed additives are classified as the refining grade or the feed grade according to the difference of the post-cultivation manufacturing methods. The former is derived from the high purity raw materials for manufacturing in which the only active constituent of an antibiotic is extracted from a culture solution and then refined, while the latter is derived from the raw materials for manufacturing in which a culture solution containing a medium component and a fungus compound used for manufacturing is dried.

Table 3 shows the number of the testing-passed cases, the passed quantity, and the quantity converted from the actual quantity into potency of the specified feed additives by refining grade and feed grade in FY 2015.

Compared between percentages of the refining grade and the feed grade based on the testing-passed quantity, the feed grade accounted for 65.8 % of the total (78.9 % in the previous FY). The feed grade also accounted for 65.0 % of the total (76.7 % in the previous FY) by the comparison based on the quantity converted from the actual quantity into potency.

Both the refining grade and the feed grade are set for colistin sulfate, nosiheptide, and salinomycin sodium. In FY 2015, only the refining grade of colistin sulfate and only the feed grade of salinomycin sodium were subjected to the testing.

### **4. Changes in the testing-passed quantity and others of the specified feed additives by category**

Figures 1 and 2 show the changes in the testing-passed quantity and the quantity converted from the actual quantity into potency by category of the specified feed additives over the last decade, from 2006 to 2015, respectively.

The total of the testing-passed quantity was significantly decreased in FY 2009 because the manufacturing of some of the specified feed additives were transferred to that by the registered manufacturers of specified feed additives, and it was remained almost unchanged until slightly decreasing in FY 2015. The quantity converted from the actual quantity into potency also showed the same trend.

As for the testing-passed quantity of the specified feed additives by category, polyether antibiotics was highest in each fiscal year and has hovered at a rate of around 50 % of the total. In FY 2015, the polyether antibiotics accounted for 54 % of the total (63 % in the previous FY), followed by the polypeptide antibiotics, 33 % (23 % in the previous FY).

The quantity converted from the actual quantity into potency was also highest for the polyether antibiotics, which changed at a rate of around 60 % of the total from FY 2006 to FY 2008 and since FY 2009 has remained more than 40 %. The polyether antibiotics accounted for 49 % (56 % in the previous FY), followed by the polypeptide antibiotics, at 28 % (19 % in the previous FY).

## **5. Quantity of the specified feed additives manufactured by the registered manufacturers of specified feed additives**

As of the end of March in 2016, the 3rd plant, Kyushu Plant, Kohkin Chemical Co., Ltd. is registered as a place of business as a manufacturer of specified feed additives concerning nosiheptide, Tatsuno Factory, Scientific Feed Laboratory Co., Ltd., is registered as a place of business as a manufacturer of specified feed additives concerning colistin sulfate, enramycin, lasalocid sodium, monensin sodium, nosiheptide, and salinomycin sodium.

Table 4 shows the manufactured quantity and the quantity converted from the actual quantity into potency of the specified feed additives by the registered manufacturers of specified feed additives in FY 2015. Moreover, lasalocid sodium which have not undergone the testing as a specified feed additive in FY 2015 were manufactured by the registered manufacturers of specified feed additives.

The quantity of the specified feed additives manufactured by the registered manufacturers of specified feed additives in FY 2015 was 709 tons (103 % over the previous FY) and the quantity converted from the actual quantity into potency was 104 tons (potency) (113 % over the previous FY).

The descending order of the manufactured quantity in FY 2015 was monensin sodium, salinomycin sodium, lasalocid sodium, nosiheptide, enramycin, and colistin sulfate.

The descending order of the quantity converted from the actual quantity into potency was monensin sodium, salinomycin sodium, lasalocid sodium, enramycin, nosiheptide, and colistin sulfate.

## **6. Total manufactured quantity of the specified feed additives**

Table 5 shows the total manufactured quantity and others and the total quantity converted from the actual quantity into potency, which are the total of the testing-passed quantity of the specified feed additives and the quantity manufactured by the registered manufacturers of specified feed additives.

The total manufactured quantity by category in FY 2015 was highest for the polyether antibiotics, 1,048 tons (testing: 426 tons; registration: 622 tons), which accounted for 70.1 % of the total. The descending order by type was salinomycin sodium (32.8 %), monensin sodium (20.7 %), and colistin sulfate (15.2 %). The total quantity converted from the actual quantity into potency by category was also highest for the polyether antibiotics, 142 tons (testing: 43 tons; registration: 98 tons), which accounted for 73.8 % of the total. The descending order by type was monensin sodium (32.3 %), salinomycin sodium (25.5 %), and colistin sulfate (11.9 %).

Figures 3 and 4 show the changes in the total manufactured quantity and others and the total quantity converted from the actual quantity into potency of the specified feed additives by category over the last decade, from FY 2006 to FY 2015, respectively.

There have been significant changes since FY 2009, because the manufacturing of some of the specified feed additives were transferred to that by the registered manufacturers of specified feed additives since FY 2007, and it was remained almost unchanged until slightly decreasing in FY

2015. The quantity converted from the actual quantity into potency also showed the same trend. In FY 2015, the percentage of the manufacturing by the registered manufacturers of specified feed additives of the total was 47 % for the manufactured quantity (43 % in the previous FY) and 54 % for the quantity converted from the actual quantity into potency (47 % in the previous FY).

## **7. Summary**

The results of the official testing of the specified feed additives and the manufacturing by the registered manufacturers of specified feed additives in FY 2015 were as follows.

- (1) Twenty brands of 12 specified feed additives passed the official testing were applied by 9 business entities.
- (2) The number of the passed cases, the passed quantity, and the quantity converted from the actual quantity into potency were 181 cases, 786 tons, and 88 tons (potency), respectively. The cases, the quantity and the quantity converted from the actual quantity into potency were slightly increased compared to the previous fiscal year.
- (3) The testing-passed quantity of the specified feed additives by type was highest of salinomycin sodium, followed by colistin sulfate and narasin in descending order.
- (4) The quantity converted from the actual quantity into potency of the specified feed additives passed the testing by type was highest for salinomycin sodium, followed by colistin sulfate and narasin in descending order.
- (5) Compared between percentages of the refining grade and the feed grade on the testing-passed quantity and the quantity converted from the actual quantity into potency of the specified feed additives, the feed grade accounted for 66 % and 65 % of the total respectively.
- (6) The quantity of the specified feed additives manufactured by the registered manufacturers of specified feed additives by type was highest for monensin sodium, followed by salinomycin sodium and lasalocid sodium in descending order.
- (7) The quantity converted from the actual quantity into potency of the specified feed additives manufactured by the registered manufacturers of specified feed additives by type was highest for monensin sodium, followed by salinomycin sodium and lasalocid sodium in descending order.
- (8) The total manufactured quantity and others which are the total of the testing-passed quantity of the specified feed additives and the quantity manufactured by the registered manufacturers of specified feed additives, by type was salinomycin sodium, monensin sodium, and colistin sulfate in descending order. The total quantity converted from the actual quantity into potency was monensin sodium, salinomycin sodium, and colistin sulfate in descending order.

Table 1: Names of applicants and others for the official testing of the specified feed additives (FY 2015)

| Contact office of FAMIC | Name of applicant                    | Place of manufacturing | Type of the specified feed additives           | Feed grade | Content potency (mg (potency)/g) | Remarks |
|-------------------------|--------------------------------------|------------------------|--|------------|----------------------------------|---------|
| Headquarters            | Japan Nutrition Co., Ltd.            | Ibaraki                | Salinomycin sodium                             | ○          | 100                              |         |
|                         | Miyarisan Pharmaceutical Co., Ltd.   | *                      | Flavophospholipol                              | ○          | 80                               |         |
|                         | Nichiku Yakuhin Kogyo Corporation    | Kanagawa               | Monensin sodium                                |            | 200                              |         |
|                         |                                      |                        | Salinomycin sodium                             | ○          | 100                              |         |
|                         | Rokku Chemical Products Co., Ltd.    | Shizuoka               | Colistin sulfate                               |            | 100                              |         |
|                         |                                      |                        | Enramycin                                      | ○          | 80                               |         |
|                         |                                      |                        | Salinomycin sodium                             | ○          | 100                              |         |
| TNB Co., Ltd.           | *                                    | Chlortetracycline      | ○  | 100        |                                  |         |
| Kobe                    | Eli Lilly Japan K. K.                | *                      | Avilamycin                                     | ○          | 200                              |         |
|                         |                                      |                        | Narasin  | ○          | 100                              |         |
|                         |                                      |                        | Tylosin phosphate                              |            | 275                              |         |
|                         | Scientific Feed Laboratory Co., Ltd. | Hyogo                  | Colistin sulfate                               |            | 100                              |         |
|                         |                                      |                        | Tylosin phosphate                              |            | 275                              |         |
| Fukuoka                 | Japan Nutrition Co., Ltd.            | *                      | Colistin sulfate                               |            | 100                              |         |
|                         |                                      |                        | Alkyltrimethylammonium calcium oxytetracycline |            | 400                              |         |
|                         | Kohkin Chemical Co., Ltd.            | Kagoshima              | Nosiheptide                                    |            | 40                               |         |
|                         |                                      |                        | Nosiheptide                                    | ○          | 40                               |         |
|                         |                                      |                        | Salinomycin sodium                             | ○          | 100                              |         |
|                         | Scientific Feed Laboratory Co., Ltd. | Miyazaki               | Colistin sulfate                               |            | 100                              |         |
| Zoetis Japan Inc.       | *                                    | Zinc bacitracin        | ○  | 100        | 4,200 unit/g                     |         |
| Total                   | 9 business entities                  | 11 places              |  |            | 20 brands                        |         |

\* Fallen under an importer

Table 2: Number of the testing-passed cases, passed quantity, and quantity converted into potency of specified feed additives  
(Sorted by the type of the antibiotics, FYs 2013 to 2015)

| Category                              | Type of the specified feed additives           | FY 2013      |                 |                           |                                       |                           | FY 2014      |                 |                           |                                       |                           | FY 2015      |                 |                           |                                       |                           |
|---------------------------------------|--|--------------|-----------------|---------------------------|---------------------------------------|---------------------------|--------------|-----------------|---------------------------|---------------------------------------|---------------------------|--------------|-----------------|---------------------------|---------------------------------------|---------------------------|
|                                       |  | Passed cases | Passed quantity | Compo-<br>sition<br>ratio | Quantity<br>converted into<br>potency | Compo-<br>sition<br>ratio | Passed cases | Passed quantity | Compo-<br>sition<br>ratio | Quantity<br>converted into<br>potency | Compo-<br>sition<br>ratio | Passed cases | Passed quantity | Compo-<br>sition<br>ratio | Quantity<br>converted into<br>potency | Compo-<br>sition<br>ratio |
|                                       |  |              |                 |                           |                                       |                           |              |                 |                           |                                       |                           |              |                 |                           |                                       |                           |
| Polypeptide antibiotics               | Colistin sulfate                               | 56           | 220,320         | 23.9                      | 22,032                                | 20.5                      | 41           | 158,120         | 17.4                      | 15,812                                | 15.1                      | 58           | 223,820         | 28.5                      | 22,382                                | 25.3                      |
|                                       | Enramycin                                      | -            | -               | -                         | -                                     | -                         | 2            | 2,380           | 0.3                       | 190                                   | 0.2                       | 3            | 3,720           | 0.5                       | 298                                   | 0.3                       |
|                                       | Nosiheptide                                    | -            | -               | -                         | -                                     | -                         | 3            | 12,000          | 1.3                       | 480                                   | 0.5                       | 6            | 22,000          | 2.8                       | 880                                   | 1.0                       |
|                                       | Zinc bacitracin                                | 8            | 44,920          | 4.9                       | 5,241                                 | 4.9                       | 7            | 34,780          | 3.8                       | 3,727                                 | 3.6                       | 2            | 9,500           | 1.2                       | 950                                   | 1.1                       |
|                                       | Subtotal                                       | 64           | 265,240         | 28.8                      | 27,273                                | 25.3                      | 53           | 207,280         | 22.8                      | 20,209                                | 19.3                      | 69           | 259,040         | 32.9                      | 24,510                                | 27.7                      |
| Tetracycline antibiotics              | Alkyltrimethylammonium calcium oxytetracycline | -            | -               | -                         | -                                     | -                         | 1            | 2,000           | 0.2                       | 800                                   | 0.8                       | 1            | 3,000           | 0.4                       | 1,200                                 | 1.4                       |
|                                       | Chlortetracycline                              | 4            | 16,000          | 1.7                       | 1,600                                 | 1.5                       | 3            | 14,400          | 1.6                       | 1,440                                 | 1.4                       | 3            | 14,000          | 1.8                       | 1,400                                 | 1.6                       |
|                                       | Subtotal                                       | 4            | 16,000          | 1.7                       | 1,600                                 | 1.5                       | 4            | 16,400          | 1.8                       | 2,240                                 | 2.1                       | 4            | 17,000          | 2.2                       | 2,600                                 | 2.9                       |
| Macrolide antibiotics                 | Sedecamycin                                    | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         |
|                                       | Tylosin phosphate                              | 4            | 20,262          | 2.2                       | 5,572                                 | 5.2                       | 5            | 19,370          | 2.1                       | 5,327                                 | 5.1                       | 4            | 19,994          | 2.5                       | 5,498                                 | 6.2                       |
|                                       | Subtotal                                       | 4            | 20,262          | 2.2                       | 5,572                                 | 5.2                       | 5            | 19,370          | 2.1                       | 5,327                                 | 5.1                       | 4            | 19,994          | 2.5                       | 5,498                                 | 6.2                       |
| Polysaccharide antibiotics            | Flavophospholipol                              | 1            | 2,500           | 0.3                       | 200                                   | 0.2                       | -            | -               | -                         | -                                     | -                         | 1            | 1,250           | 0.2                       | 100                                   | 0.1                       |
|                                       | Subtotal                                       | 1            | 2,500           | 0.3                       | 200                                   | 0.2                       | -            | -               | -                         | -                                     | -                         | 1            | 1,250           | 0.2                       | 100                                   | 0.1                       |
| Polyether antibiotics                 | Lasalocid sodium                               | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         |
|                                       | Monensin sodium                                | 2            | 7,940           | 0.9                       | 1,588                                 | 1.5                       | 3            | 12,140          | 1.3                       | 2,428                                 | 2.3                       | 3            | 6,080           | 0.8                       | 1,216                                 | 1.4                       |
|                                       | Narasin  | 18           | 197,625         | 21.4                      | 19,763                                | 18.4                      | 29           | 317,775         | 34.9                      | 31,778                                | 30.3                      | 12           | 131,625         | 16.7                      | 13,163                                | 14.9                      |
|                                       | Salinomycin sodium                             | 76           | 308,122         | 33.4                      | 30,812                                | 28.6                      | 61           | 244,875         | 26.9                      | 24,488                                | 23.4                      | 71           | 288,780         | 36.7                      | 28,878                                | 32.6                      |
|                                       | Subtotal                                       | 96           | 513,687         | 55.7                      | 52,163                                | 48.5                      | 93           | 574,790         | 63.2                      | 58,693                                | 56.0                      | 86           | 426,485         | 54.2                      | 43,257                                | 48.9                      |
| Others                                | Avilamycin                                     | 28           | 104,200         | 11.3                      | 20,840                                | 19.4                      | 25           | 91,575          | 10.1                      | 18,315                                | 17.5                      | 17           | 62,675          | 8.0                       | 12,535                                | 14.2                      |
|                                       | Bicozamycin                                    | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         |
|                                       | Efrotomycin                                    | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         |
|                                       | Virginiamycin                                  | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         | -            | -               | -                         | -                                     | -                         |
|                                       | Subtotal                                       | 28           | 104,200         | 11.3                      | 20,840                                | 19.4                      | 25           | 91,575          | 10.1                      | 18,315                                | 17.5                      | 17           | 62,675          | 8.0                       | 12,535                                | 14.2                      |
| Total                                 |  | 197          | 921,889         | 100.0                     | 107,648                               | 100.0                     | 180          | 909,415         | 100.0                     | 104,784                               | 100.0                     | 181          | 786,444         | 100.0                     | 88,499                                | 100.0                     |
| Ratio to the previous fiscal year (%) |  | 104          | 97              |                           | 99                                    |                           | 91           | 99              |                           | 97                                    |                           | 101          | 86              |                           | 84                                    |                           |

Note: Quantity and others of the specified feed additives manufactured by the registered manufacturers are shown separately in Table 4.  
Sedecamycin was revoked designation as a feed additive on February 6, 2014.

Table 3: Number of the testing-passed cases, passed quantity, and quantity converted into potency  
(Sorted by the grade of the preparation, FY 2015)

| Category                   | Type of the specified feed additives           | Refining grade |                       |  | Feed grade   |                       |  |
|----------------------------|--|----------------|-----------------------|--|--------------|-----------------------|--|
|                            |  | Passed cases   | Passed quantity<br>kg | Quantity converted into potency<br>kg(potency) | Passed cases | Passed quantity<br>kg | Quantity converted into potency<br>kg(potency) |
| Polypeptide antibiotics    | Colistin sulfate                               | 58             | 223,820               | 22,382   | —            | —                     | —  |
|                            | Enramycin                                      | /              | /                     | /  | 3            | 3,720                 | 298  |
|                            | Nosiheptide                                    | 4              | 16,000                | 640  | 2            | 6,000                 | 240  |
|                            | Zinc bacitracin                                | /              | /                     | /  | 2            | 9,500                 | 950  |
| Tetracycline antibiotics   | Alkyltrimethylammonium calcium oxytetracycline | 1              | 3,000                 | 1,200  | /            | /                     | /  |
|                            | Chlortetracycline                              | /              | /                     | /  | 3            | 14,000                | 1,400  |
| Macrolide antibiotics      | Tylosin phosphate                              | 4              | 19,994                | 5,498  | /            | /                     | /  |
| Polysaccharide antibiotics | Flavophospholipol                              | /              | /                     | /  | 1            | 1,250                 | 100  |
| Polyether antibiotics      | Lasalocid sodium                               | —              | —                     | —  | /            | /                     | /  |
|                            | Monensin sodium                                | 3              | 6,080                 | 1,216  | /            | /                     | /  |
|                            | Narasin  | /              | /                     | /  | 12           | 131,625               | 13,163   |
|                            | Salinomycin sodium                             | —              | —                     | —  | 71           | 288,780               | 28,878   |
|                            | Semduramicin sodium                            | —              | —                     | —  | /            | /                     | /  |
| Others                     | Avilamycin                                     | /              | /                     | /  | 17           | 62,675                | 12,535   |
|                            | Bicozamycin                                    | —              | —                     | —  | /            | /                     | /  |
|                            | Efrotomycin                                    | —              | —                     | —  | /            | /                     | /  |
|                            | Virginiamycin                                  | —              | —                     | —  | /            | /                     | /  |
| Total                      |  | 70             | 268,894               | 30,936   | 111          | 517,550               | 57,563   |
| Proportion (%)             |  | 38.7           | 34.2                  | 35.0   | 61.3         | 65.8                  | 65.0   |



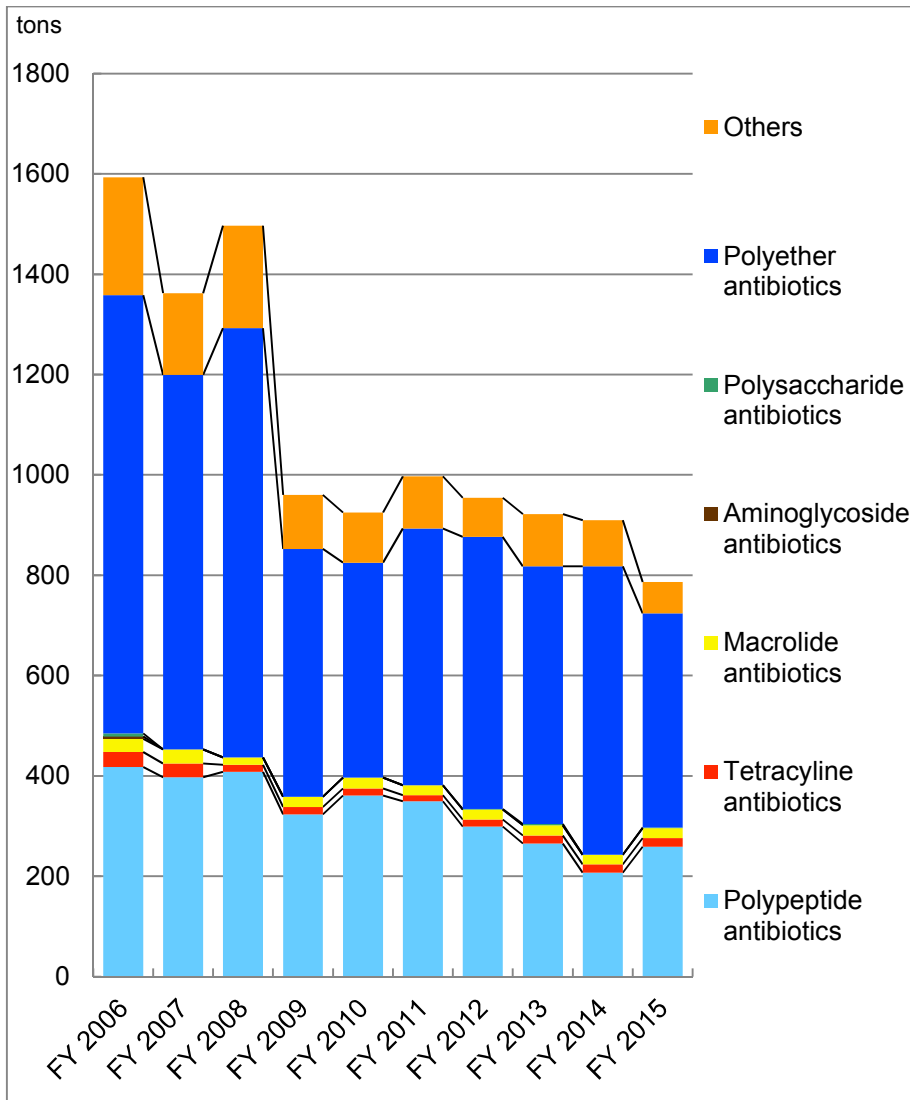


Figure 1: Changes in the testing-passed quantity of the specified feed additives (Sorted by category of antibiotics)

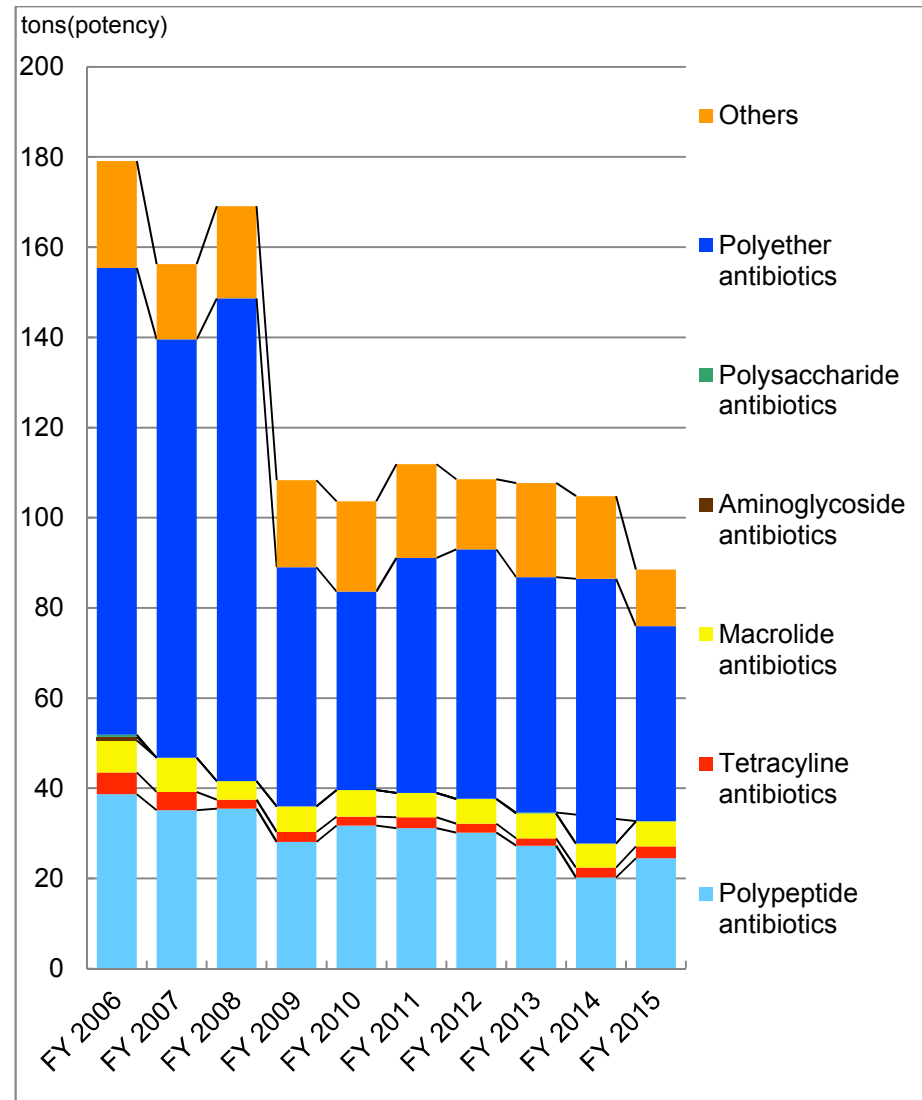


Figure 2: Changes in the testing-passed quantity of the specified feed additives converted into potency (Sorted by category of antibiotics)

Table 4: Manufactured quantity by the registered manufacturers of specified feed additives (FY 2014 and 2015)

| Category                              | Type of the specified feed additives | FY 2014                |                                 | FY 2015                |                                 |
|---------------------------------------|--------------------------------------|------------------------|---------------------------------|------------------------|---------------------------------|
|                                       |                                      | Manufactured quantity* | Quantity converted into potency | Manufactured quantity* | Quantity converted into potency |
|                                       |                                      | kg                     | kg(potency)                     | kg                     | kg(potency)                     |
| Polypeptide antibiotics               | Colistin sulfate                     | 4,020                  | 402                             | 4,000                  | 400                             |
|                                       | Enramycin                            | 68,680                 | 5,494                           | 34,620                 | 2,770                           |
|                                       | Nosiheptide                          | 55,500                 | 2,220                           | 48,220                 | 1,929                           |
|                                       | Subtotal                             | 128,200                | 8,116                           | 86,840                 | 5,098                           |
| Polyether antibiotics                 | Lasalocid sodium                     | 87,300                 | 13,095                          | 116,920                | 17,538                          |
|                                       | Monensin sodium                      | 233,540                | 46,708                          | 303,760                | 60,752                          |
|                                       | Salinomycin sodium                   | 240,320                | 24,032                          | 201,200                | 20,120                          |
|                                       | Subtotal                             | 561,160                | 83,835                          | 621,880                | 98,410                          |
| Total                                 |                                      | 689,360                | 91,951                          | 708,720                | 103,508                         |
| Ratio to the previous fiscal year (%) |                                      | 101                    | 100                             | 103                    | 113                             |

\* Hearing from each registered manufacturer of specified feed additives.

Table 5: Total manufactured quantity of the specified feed additives (FY 2015)

| Category                   | Type of specified feed additives               | Total quantity <sup>*1</sup> | Composition ratio | Total quantity converted into potency <sup>*2</sup> | Composition ratio |
|----------------------------|--|------------------------------|-------------------|---|-------------------|
|                            |  | (kg)                         | (%)               | (kg(potency))                                       | (%)               |
| Polypeptide antibiotics    | Colistin sulfate                               | 227,820                      | 15.2              | 22,782  | 11.9              |
|                            | Enramycin                                      | 38,340                       | 2.6               | 3,067   | 1.6               |
|                            | Nosiheptide                                    | 70,220                       | 4.7               | 2,809   | 1.5               |
|                            | Zinc bacitracin                                | 9,500                        | 0.6               | 950   | 0.5               |
|                            | Subtotal                                       | 345,880                      | 23.1              | 29,608  | 15.4              |
| Tetracycline antibiotics   | Alkyltrimethylammonium calcium oxytetracycline | 3,000                        | 0.2               | 1,200   | 0.6               |
|                            | Chlortetracycline                              | 14,000                       | 0.9               | 1,400   | 0.7               |
|                            | Subtotal                                       | 17,000                       | 1.1               | 2,600   | 1.4               |
| Macrolide antibiotics      | Tylosin phosphate                              | 19,994                       | 1.3               | 5,498   | 2.9               |
|                            | Subtotal                                       | 19,994                       | 1.3               | 5,498   | 2.9               |
| Polysaccharide antibiotics | Flavophospholipol                              | 1,250                        | 0.1               | 100   | 0.1               |
|                            | Subtotal                                       | 1,250                        | 0.1               | 100   | 0.1               |
| Polyether antibiotics      | Lasalocid sodium                               | 116,920                      | 7.8               | 17,538  | 9.1               |
|                            | Monensin sodium                                | 309,840                      | 20.7              | 61,968  | 32.3              |
|                            | Narasin  | 131,625                      | 8.8               | 13,163  | 6.9               |
|                            | Salinomycin sodium                             | 489,980                      | 32.8              | 48,998  | 25.5              |
|                            | Semduramicin sodium                            | —                            | —                 | —   | —                 |
|                            | Subtotal                                       | 1,048,365                    | 70.1              | 141,667   | 73.8              |
| Others                     | Avilamycin                                     | 62,675                       | 4.2               | 12,535  | 6.5               |
|                            | Bicozamycin                                    | —                            | —                 | —   | —                 |
|                            | Efrotomycin                                    | —                            | —                 | —   | —                 |
|                            | Virginiamycin                                  | —                            | —                 | —   | —                 |
|                            | Subtotal                                       | 62,675                       | 4.2               | 12,535  | 6.5               |
| Total                      |  | 1,495,164                    | 100.0             | 192,008   | 100.0             |

\*1 The total quantity of the specified feed additives of the testing-passed quantity and the quantity manufactured by the registered manufacturers

\*2 The total quantity converted into potency of the testing-passed quantity and the quantity manufactured by the registered manufacturers

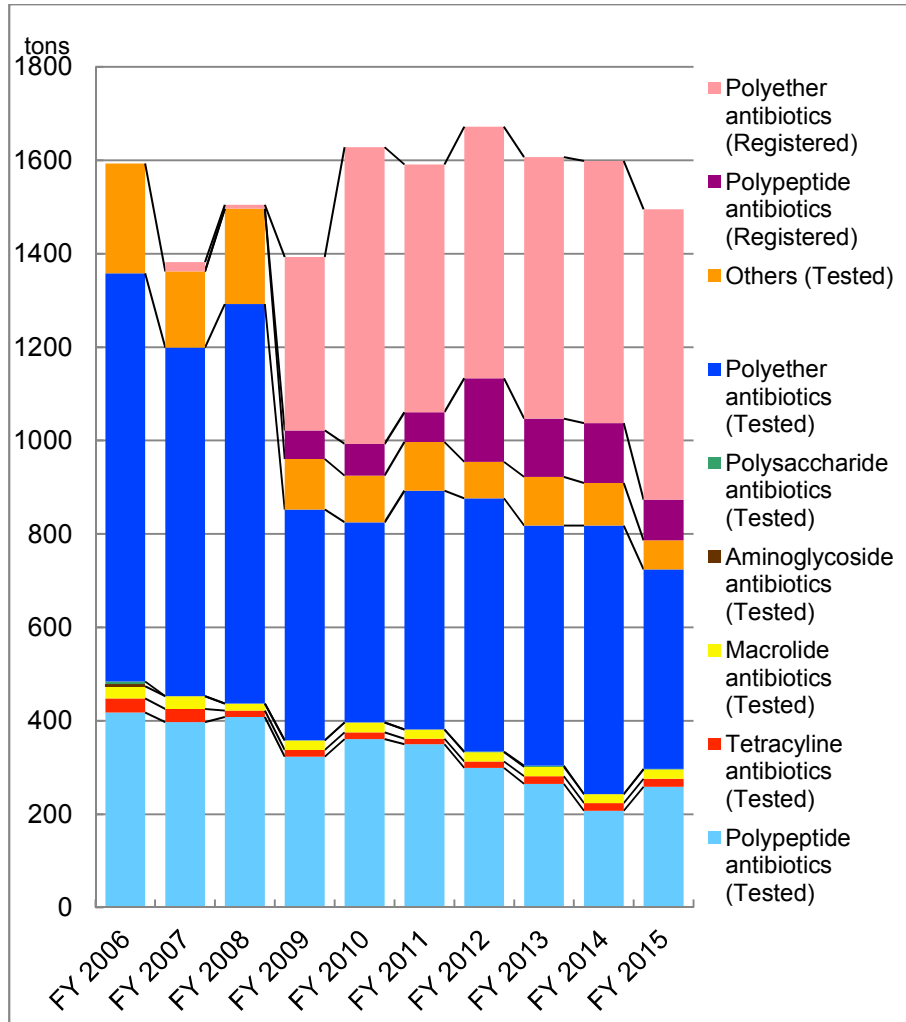


Figure 3: Changes in the testing-passed quantity and the quantity manufactured by the registered manufacturers of the specified feed additives (Sorted by category of antibiotics)

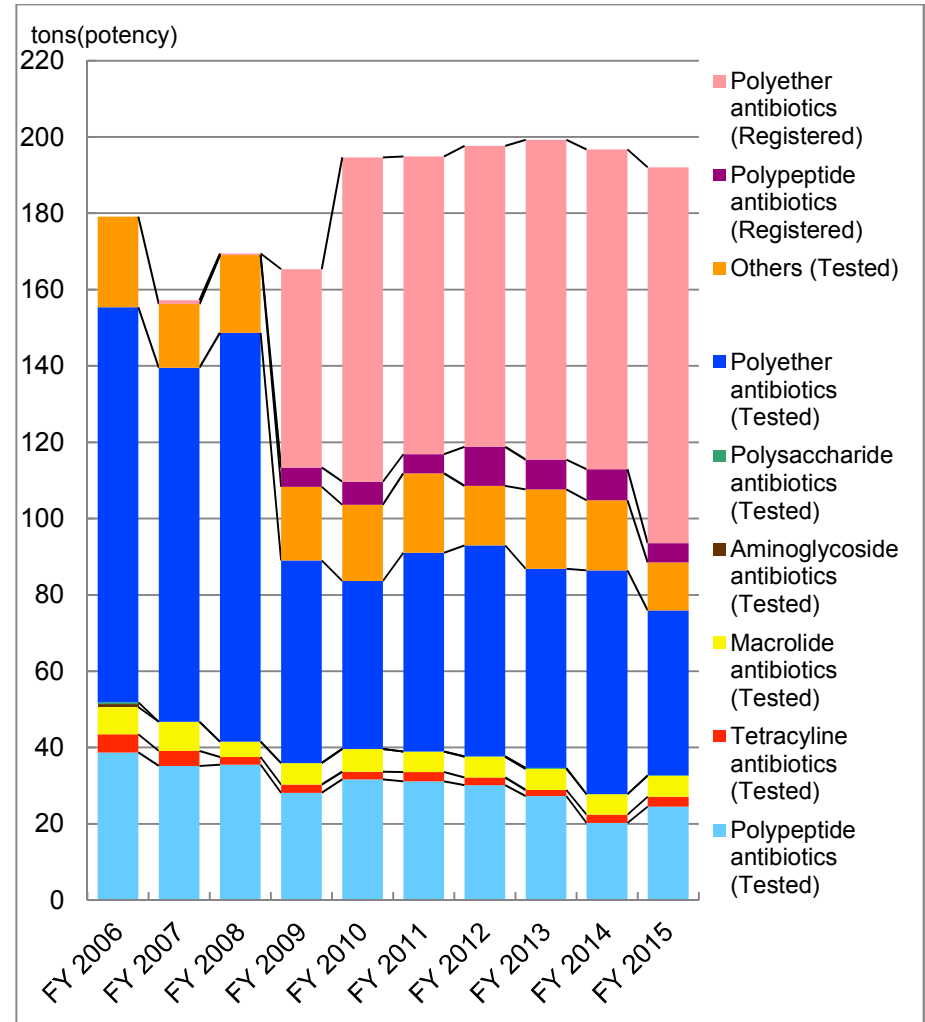


Figure 4: Changes in the testing-passed quantity and the quantity manufactured by the registered manufacturers of the specified feed additives converted into potency (Sorted by category of antibiotics)