

**Reference:**

The Animal Health product overview is based on the portfolio as of 31.12.2016. As of 1.1.2017, the strategic business swap between Boehringer Ingelheim and Sanofi was finalised. Boehringer Ingelheim's Consumer Healthcare business

(CHC) was transferred to Sanofi. Boehringer Ingelheim acquired Sanofi's Animal Health business (Merial). The Merial portfolio is not reflected in this overview.

## LIVESTOCK - SWINE

**Infectious respiratory diseases**

INGELVAC CIRCOFLEX® is the first single-dose piglet vaccine for the control of porcine circovirus disease (PCVD). This vaccine provides significant reduction of mortality in the acute phase of PCVD as well as improved growth rates in the chronic phase of the disease. INGELVAC CIRCOFLEX® protects with minimal systemic adverse reactions or injection site swellings and can be used during pregnancy and lactation. Our INGELVAC® PRRS products are licensed for active immunisation against the respiratory and reproductive form of porcine reproductive and respiratory syndrome (PRRS).

INGELVAC MYCOFLEX® is licensed for the active immunisation of pigs against enzootic pneumonia (EP) in a single-dose regimen. Through its advanced adjuvant system, it provides long-lasting and effective protection, proven even in high-challenge situations.

**Infectious enteric diseases**

ENTERISOL® ILEITIS is the first and only vaccine against ileitis caused by Lawsonia intracellularis. It is licensed to improve weight gain and to reduce growth variability associated with the disease. ENTERISOL® ILEITIS helps to reduce the total antimicrobial use in pork production.

## LIVESTOCK - POULTRY

VOLVAC® is the umbrella brand of the Boehringer Ingelheim Animal Health poultry vaccine range. It consists of a wide range of live and inactivated vaccines for broilers and layers. The vaccines provide protection of the birds against

various viral and bacterial diseases like avian influenza, infectious bronchitis, Newcastle disease, infectious bursal disease, egg drop syndrome and avian coryza.

| INDICATIONS                       | BRAND NAMES  | ACTIVE INGREDIENTS  |   |
|-----------------------------------|--|---|---|
| - Infectious respiratory diseases | INGELVAC CIRCOFLEX®                                      | <i>recombinant vaccine (porcine circovirus type 2, PCV 2)</i><br>                                     | For the active immunisation of pigs over the age of two weeks against porcine circovirus type 2 to reduce mortality, clinical signs – including weight loss – and lesions in lymphoid tissues associated with porcine circovirus diseases (PCVD). In addition, vaccination has been shown to reduce PCV 2 nasal shedding, viral load in blood and lymphoid tissues, and duration of viraemia. |
| - Infectious respiratory diseases | INGELVAC® PRRS MLV<br>INGELVAC PRRSFLEX® EU<br>REPROCYC® | <i>attenuated live vaccine (PRRS virus) type 2 (PRRS MLV) type 1 (PRRSFLEX® EU and REPROCYC®)</i><br> | Depending on product, for active immunisation of pigs at various ages against porcine reproductive and respiratory syndrome virus (PRRSV).  |
| - Infectious respiratory diseases | INGELVAC MYCOFLEX®                                       | <i>inactivated vaccine (Mycoplasma hyopneumoniae)</i><br>   | For the active immunisation of pigs from the age of three weeks to reduce lung lesions following infections with Mycoplasma hyopneumoniae.  |
| - Infectious enteric diseases     | ENTERISOL® ILEITIS                                       | <i>attenuated live vaccine (Lawsonia intracellularis)</i><br>                                       | For the active immunisation of pigs from the age of three weeks against intestinal lesions caused by Lawsonia intracellularis infection and to reduce growth variability and loss of weight gain associated with the disease.   |

| INDICATIONS                                       | BRAND NAMES | ACTIVE INGREDIENTS   |  |
|---|-------------|--|--|
| - Various viral and bacterial diseases in poultry | VOLVAC®     | <i>polyvalent attenuated live and inactivated vaccine containing antigens for vaccination against avian influenza, Newcastle disease, avian coryza, egg drop syndrome, infectious bronchitis, infectious bursal disease, bacterium anatis</i><br> | For vaccination of healthy chickens against diseases caused by the included antigens. For the prevention of the most common diseases in broiler chickens and of diseases responsible for losses in egg production in layers. |

## LIVESTOCK - CATTLE

### Mastitis

Mastitis is the inflammation of the udder in dairy cattle, mainly caused by bacterial infection. Prevention and treatment of mastitis in these animals is key to producing healthy milk and minimising the symptoms associated with this clinical situation. MAMYZIN® is an effective injectable antimicrobial for the treatment of acute mastitis. UBROLEXIN® and TODAY® are two products for the treatment of acute bacterial mastitis, whereas UBROSTAR® and TOMORROW® are used to prevent mastitis during drying-off in dairy cattle at the end of their lactation period.

| INDICATIONS | BRAND NAMES                                    | ACTIVE INGREDIENTS  |   |
|-------------|--|---|---|
| - Mastitis  | MAMYZIN®                                       | <i>penethamate hydroiodide</i>  | Bovine mastitis caused by penicillin sensitive organisms.<br><br>   |
| - Mastitis  | UBROSTAR®<br>BENESTERMYCIN®<br>MAMYZIN® SECADO | <i>penethamate hydroiodide, framycetin sulphate, benethamine penicillin</i> | For the treatment of subclinical mastitis at drying-off, and the prevention of new bacterial infections of the udder during the dry period in dairy cows, caused by bacteria susceptible to penicillin and framycetin.<br><br>        |
| - Mastitis  | UBROLEXIN®                                     | <i>cefalexin, kanamycin combination</i>                                     | Treatment of clinical mastitis in lactating dairy cows for bacteria susceptible to the combination of cefalexin and kanamycin.<br><br>  |
| - Mastitis  | TODAY®<br>CEFA-LAK®                            | <i>cephapirin sodium</i>  | Treatment of clinical mastitis in lactating dairy cows (US/Canada).<br><br>   |
| - Mastitis  | TOMORROW®<br>CEFA-DRI®                         | <i>cephapirin benzathine</i>  | For the treatment of subclinical mastitis at drying-off, and the prevention of new bacterial infections of the udder during the dry period in dairy cows (US/Canada). For intramammary infusion into the dry cow (US only).<br><br> |

## LIVESTOCK - CATTLE (CONTINUED)

### Pain and inflammatory disorders

METACAM® is a non-steroidal anti-inflammatory drug (NSAID) and addresses the need for maintained profitability and the concern for animal welfare in animal production. Due to its long-acting nature and its outstanding efficacy in controlling inflammatory symptoms, METACAM® helps to minimise losses from inflammation and maintain profitability. At the same time, METACAM® effectively controls pain and supports the restoration of well-being in farm animals. The use of METACAM® is convenient and inflicts minimal stress on animals due to its low-volume, one-shot dosage.

METACAM® is licensed as adjunctive therapy in the treatment of mastitis in lactating cows. In most countries it is also indicated for use in calves affected by diarrhoea and in cattle suffering from respiratory disease.

### Infectious diseases

The PYRAMID® family of vaccines is providing a broad coverage against respiratory and reproductive diseases. The range consists of several antigen combinations.

Bovine viral diarrhoea virus (BVDV) is one of the major and economically relevant cattle pathogens with a worldwide distribution. The disease caused by BVDV results in marked production losses in dairy and beef herds. BOVELA® is a vaccine that is designed to reduce some of the clinical signs typical for BVD, and to prevent the birth of so-called persistently infected animals caused by transplacental infection with BVDV. Vaccination with BOVELA® is expected to provide protection within the herd against the disease and against the circulation of the virus.

| INDICATIONS   | BRAND NAMES                   | ACTIVE INGREDIENTS   |  |
|---|-------------------------------|--|--|
| <p>- Pain and inflammatory disorders</p>  | <p>METACAM®</p>               | <p><i>meloxicam</i></p>  | <p>In cattle, METACAM® is used together with appropriate antibiotic therapy to reduce clinical signs of disease in acute respiratory infection. It can be used in diarrhoea in combination with oral rehydration therapy to reduce clinical signs of the disease in calves of over one week of age, and young, non-lactating cattle. It can also be used for the relief of post-operative pain following dehorning in calves and as supportive therapy in the treatment of acute mastitis in combination with antibiotics.</p> |
| <p>- Cattle infectious diseases<br/>- Respiratory and reproductive diseases in cattle</p> | <p>PYRAMID®<br/>PRESENSE®</p> | <p><i>several multivalent vaccine combinations including modified live viruses: bovine viral diarrhoea (BVD) types 1 and 2, infectious bovine rhinotracheitis (IBR), parainfluenza-3 (PI3) and bovine respiratory syncytial virus (BRSV), and bacteria: Pasteurella multocida, Mannheimia haemolytica, L. canicola, L. grippotyphosa, L. hardjo, L. icterohaemorrhagiae, and L. pomona</i></p> | <p>For vaccination of healthy dairy or beef cattle as an aid in prevention of diseases caused by included antigens (US and Canada only).</p>   |
| <p>- Bovine viral diarrhoea (BVD)</p>   | <p>BOVELA®</p>                | <p><i>modified live BVDV*-1 strain,<br/>modified live BVDV*-2 strain</i></p>   | <p>BOVELA® is used to protect cattle against BVD viral infection.</p>  |



\* Bovine viral diarrhoea virus

## COMPANION ANIMALS - HORSE

Our main horse products focus on the therapeutic areas of respiratory disease, lameness, colic and hormonal disorders.

PRASCEND® is indicated for the treatment of pituitary pars intermedia dysfunction (PPID), which is also known as equine Cushing's disease. PRASCEND® substitutes for the lack of dopamine in the pituitary pars intermedia. Clinical signs are hypertrichiosis, laminitis, change in body conformation and lack of performance. Treatment with PRASCEND® is life-long.

VETERA® vaccines are the first vaccine portfolio that include multiple convenient combinations of disease protection for horses from as young as four months of age. The vaccines protect against as many as nine infectious organisms including influenza, herpes, the West Nile virus, tetanus and others. This enables customised protection for each horse with limited needle injections.

All VETERA® vaccines are formulated utilising the ULTRAFIL™ Purification Technology, removing most of the extraneous proteins and allowing the horse's immune system to focus on the relevant antigens.

In the respiratory segment two products are available on a global level: VENTIPULMIN® and EQUISOLON®. Both products are licensed for the treatment of respiratory disease including airway obstruction in which horses wheeze, cough and have difficulty breathing due to bronchospasm and/or mucus accumulation. VENTIPULMIN® and EQUISOLON® can both be used alone or as adjunctive therapy in chronic obstructive pulmonary disease (COPD) and in acute, sub-acute and chronic respiratory allergic conditions.

| INDICATIONS   | BRAND NAMES         | ACTIVE INGREDIENTS  |   |
|---|---------------------|---|---|
| <p>- Pituitary pars intermedia dysfunction (PPID)</p>                     | <p>PRASCEND®</p>    | <p><i>pergolide mesylate</i></p>    | <p>Symptomatic treatment of clinical signs associated with pituitary pars intermedia dysfunction (PPID; also known as equine Cushing's disease).</p>                            |
| <p>- Combination vaccine against up to nine common diseases in horses</p> | <p>VETERA®</p>      | <p><i>Eastern, Western and Venezuelan encephalomyelitis, tetanus, West Nile virus, equine herpes virus, equine influenza viruses</i></p>  | <p>For vaccination of healthy horses as an aid in the prevention of diseases caused by the included antigens (US and Canada only).</p>  |
| <p>- Acute and chronic obstructive respiratory diseases</p>               | <p>VENTIPULMIN®</p> | <p><i>clenbuterol</i></p>    | <p>Treatment of respiratory disease in horses when airway obstruction is due to bronchospasm and/or accumulation of mucus, and improved mucociliary clearance is desirable.</p> |
| <p>- Recurrent airway obstruction (RAO) or heaves</p>                     | <p>EQUISOLON®</p>   | <p><i>prednisolone</i></p>    | <p>For the treatment of recurrent airway obstruction (RAO) or heaves in horses in combination with environmental measures.</p>  |

## COMPANION ANIMALS - SMALL ANIMALS

The main small animal products address major chronic diseases: heart failure, kidney diseases, epilepsy and osteoarthritis.

As the first of a new class of heart treatments termed inodilators, VETMEDIN® has been shown to significantly improve clinical signs and extend life expectancy in dogs with congestive heart failure originating from dilated cardiomyopathy or valvular insufficiency (mitral and/or tricuspid regurgitation). VETMEDIN® works through two complementary modes of action: it opens up the blood vessels taking blood to and away from the heart, thereby lowering the pressure on the heart and reducing the work the heart has to do to pump blood around the dog's body. At the same time, VETMEDIN® has a direct effect on the heart muscle, helping it to beat stronger and pump blood more efficiently.

METACAM® is a non-steroidal anti-inflammatory drug (NSAID). It is available as an oral suspension, tablets and injectable solution for dogs and as an oral suspension and injectable solution for cats. In dogs, the indications include the alleviation of inflammation and pain in both acute and chronic musculo-skeletal disorders, as well as the reduction of pain following surgery. In cats, the indications include the alleviation of inflammation and pain in acute and chronic musculo-skeletal disorders, as well as for alleviation of mild to moderate post-operative pain. The variety of formulations offers veterinarians and owners the flexibility to use the formulation they prefer in individual cases to manage the various levels of inflammation and pain associated with the licensed indications.

PROZINC® is an aqueous protamine zinc (PZI) suspension of recombinant human insulin that is used to reduce hyperglycaemia in cats with diabetes mellitus.

SEMINTRA® is an angiotensin II antagonist which is approved for the reduction of proteinuria associated with chronic kidney disease (CKD) in cats. SEMINTRA® decreases mean arterial blood pressure and proteinuria and is available as an oral solution.

PEXION® is an alternative treatment for canine epilepsy. The active substance imepitoin primarily inhibits seizures via potentiation of GABAA-receptor-mediated inhibitory effects on neurons. PEXION® is approved for reduction of generalised seizures due to idiopathic epilepsy, and it has potential safety benefits over existing standard treatment.

| INDICATIONS                      | BRAND NAMES | ACTIVE INGREDIENTS                              |  |
|----------------------------------|-------------|---|--|
| - Congestive heart failure       | VETMEDIN®   | <i>pimobendan</i>                               |  <p>Treatment of canine congestive heart failure originating from dilatative cardiomyopathy or valvular insufficiency (mitral and/or tricuspid regurgitation). For the treatment of dilated cardiomyopathy in the preclinical stage (asymptomatic with an increase in left ventricular end-systolic and end-diastolic diameter) in Doberman Pinschers following echocardiographic diagnosis of cardiac disease.</p>  |
| - Pain and inflammatory diseases | METACAM®    | <i>meloxicam</i>                                |  <p>In dogs, METACAM® is used to reduce post-operative pain and inflammation following orthopaedic (e.g. fracture operation) and soft tissue surgery.</p> <p>In cats, METACAM® is used to reduce post-operative pain and inflammation after ovariohysterectomy (spay operation), orthopaedic and minor soft tissue surgery.</p> <p>Moreover, it is used for the alleviation of pain and inflammation in acute and chronic musculo-skeletal disorders (dogs and cats).</p> |
| - Feline diabetes mellitus       | PROZINC®    | <i>protamine zinc recombinant human insulin</i> |  <p>For the reduction of hyperglycaemia and hyperglycaemia-associated clinical signs in cats with diabetes mellitus.</p>   |
| - Feline chronic kidney disease  | SEMINTRA®   | <i>telmisartan</i>                              |  <p>Reduction of proteinuria associated with chronic kidney disease (CKD) in cats.</p>   |
| - Canine idiopathic epilepsy     | PEXION®     | <i>imepitoin</i>                                |  <p>For the reduction of the frequency of generalised seizures due to idiopathic epilepsy in dogs after careful evaluation of alternative treatment options.</p>   |