

Natural Swine Health

A guide to keeping your pigs healthy with herbs and other natural products

bioKennis

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Natural Pig Health

A guide to keeping your pigs healthy with herbs and other natural products

Compiled

for the Product Working Group Organic Pig Husbandry
by the Project Group Naturally Healthy (based on the Fyto-V project)

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DISCLAIMER

Great care has been taken in compiling this publication. However, the writers cannot be held liable for any damage caused by the use of products mentioned in this text. The information presented here is partly based on information provided by others. Unfortunately we do not have the time or financial means to check all information exhaustively.

It is recommended that professional pig farmers get their information on this subject from a variety of sources and discuss the use of natural products with a pig veterinarian. The order of the products in the tables does not imply a valuation of any kind. The lists of products are not exhaustive and complete. When only a few names of general products that contain the same active substances are given, no preference for these products is implied.

We expect all users of this booklet to apply the dosage and use recommended by the manufacturer. When in doubt about use, dosage or duration of a treatment, you can contact the manufacturer of the product.

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1 Working with natural products

This booklet is intended to guide pig farmers through the ever increasing supply of herbs and other natural products that can be purchased nowadays. Herbs and other natural products can support healthy animals in stressful situations or enhance treatment with conventional medication. The greatest added value of the use of natural products is prevention of diseases and other health problems.

Which natural products have proven to be effective and which products might be effective, based on the currently available knowledge? This guide aims to answer these questions. Because this type of knowledge is developing quickly, updates will be necessary from time to time.

Besides general information on the use of natural products (in this chapter and in Annex 1), this guide will also provide information on suitable management measures for a number of health issues. The role of natural products in the application of these management measures will also be dealt with. Although a large number of natural products is on offer to treat people, hardly any research has been done into their effectiveness in pigs. This means that optimal dosages, length of treatment and interactions with animal medications are often unknown. Hopefully, these gaps in our knowledge can be filled with additional research in the near future.

1.1 Preventive use

Preventing diseases is overall a much better option than fighting them. Prevention of animal diseases is therefore a focal point on many farms. Prevention comprises not only of preventing an infection from entering the farm and spreading, but includes good nutrition, suitable housing, good management, a sensible breeding programme and appropriate rearing. In this way, the immune system of the animals will be supported.

Primary prevention means: by improving the animals immune system, less animals will get ill, or the disease will be less severe.. Animals will also recover more quickly when they have better resistance. It is therefore always a good idea to work on the general immunity of animals, even if no disease has (yet) been identified. Primary preventive measures are generally taken at farm level.

Secondary prevention means: when animals do get sick, they will heal quicker because their general fitness is better. Animals will heal under their own steam, as much as possible, using for instance certain herbs than can temporarily be added to the feed. These types of measures are generally taken for individual animals or groups.

Such an approach requires early identification of problems in animals. Timely correction of small problems can prevent heavier medication from being necessary down the line.

Vaccination is a well-known preventive measure. Blood can be examined for antibodies to check whether the vaccination has worked. The effectiveness of other preventive management measures is often harder to prove than the effectiveness of curative (healing) products. It is for

example hard to prove that an animal does not become ill – or gets better quicker – by using certain feedstuffs.

In a farm animals life cycle certain periods or moments are naturally stressful. Examples are: birth, adaptation of new-born piglets to their surroundings, and changes in feed. Insight in these stressful events is essential to predict what might happen and to take appropriate measures to help the animal through these ‘hard times’.

Apart from these ‘natural’ stress moments external factors can contribute to stress in the animals. Examples are weather changes, seasonal feed changes, infections (viral, bacterial or parasitic) and wounds and injuries. To curb the influence these external factors have on the animals, preventive measures can be taken. A proper vaccination policy, hygiene barriers and optimal disease resistance of the animals are all important.

Natural feed components and herbs can help sustain animal health. Using these products can diminish the number of disease outbreaks on a farm and can help to restrict the use of modern medication (like antibiotics) to a limited number of severely diseased animals. Prevention is always preferable to treatment!

Health management on pig farms requires a high level of professionalism. The overview of natural products presented in this little book is meant to contribute to sustainable health management.

1.2 Tradition and learning by doing

Herbs and microorganisms traditionally play an important role in managing animal and human health. They were used on perishable foodstuffs (garlic and oregano on meat products and lactobacillus in dairy products or sauerkraut for instance). Herbs have traditionally been used in medicine and have been the basis of modern medications (once their active substances had been identified). Singular active components may have poisonous effects when used in large dosages. Foxglove is an example: it can treat heart disease but it can poison horses and have harmful side-effects.

The word ‘herb’ generally refers to plants that – when used in ‘normal’ dosages – have no harmful effects. These plants contain numerous active substances, that together have a positive influence on animal or human metabolic processes. Garlic, for example, has a mild antibiotic effect on harmful bacteria in the gut, but also acts as an antioxidant in the liver. Because volatile substances from garlic are excreted through the lungs (when breathing), it even has a mild disinfecting effect on the respiratory tract. Insight into these kinds of effects has recently caused a rediscovery of herbs and natural products in human health care and animal preventive medicine.

1.3 Role of natural products in management

We cannot expect miracles from natural products, but they can help in fine-tuning. Good management and good nutrition remain most important. To prevent diseases it is advisable to pay strong attention to management, nutrition and hygiene. See the literature list at the end of this chapter, for books and courses on this subject.

Keep good record of the products that you have used: What was it used for? What was the used dosage? And what was the result? Do not use products of unknown composition and definitely not based on unpublished results. Some plants may be harmful! Ask your feed supplier which herbs or aromas are already in your feed and get help from vets or feed advisors with in-depth knowledge of these matters. Do not experiment with multiple products at the same time.

In acute and severe cases regular medication and the input of a vet remain essential. These are the top of the pyramid (Figure 1); as a farmer you are responsible for a firm basis.

Disease prevention through the use of natural products is important for animal health. On the one hand to reach an optimal general condition of all animals. On the other hand for the extra care of certain groups of animals at times when they need additional support.

Figure 1. Managing animal health
(from FiBL 2006, adapted)



From bottom to top:

1. Measures on the level of breeding and production chain work on the long term and are related to for instance the choice of breeds or types and national agreements on vaccinations.
2. Management at farm level creates optimal conditions in terms of nutrition, climate, housing, hygiene and vaccinations.
3. Natural products can be used to improve digestion, resistance and general health. This can prevent diseases or support recovery.
4. In acute cases of animal disease, medication will be used. If this is successful, the problem will be solved in the short term. Damage will, however, already be done due to diminished growth or production, a higher mortality and the cost of the medications. It is therefore important that the situation does not escalate to the point where only medication can help.

1.4 Which products are allowed?

Please ask your national organic registration agency to find out which products are allowed in organic production. Non-organic herbs may not be allowed or only in lower quantities.

1.5 Additional information

More information can be found in the Annexes of this book. Here you will find background information.

Literature (only German and English literature is mentioned here):

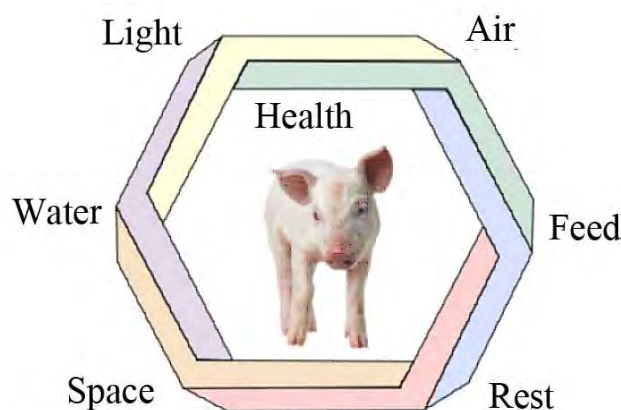
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2 Health management for pigs

2.1 Pig husbandry is a matter of using your eyes

A well-known Dutch saying is: Pig husbandry is a matter of using your eyes. Pig farmers can identify many indications of wellbeing, discomfort or disease by consciously observing their animals. Targeted measures can subsequently improve the vitality, health and production of all pigs. The book “Pig signals” by Jan Hulsen and Kees Scheepens provides a great number of examples.

The cornerstones of healthy pig husbandry are: housing, feed, light, air, space and rest.



When one or more of these cornerstones become compromised, wellbeing and production will decrease and natural disease resistance will become lower. Pigs are also very susceptible to stress. Crowded pens or bad ventilation can lead to stomach ulcers in pigs.

2.2 Critical moments

Pigs are particularly vulnerable at specific moments in their lives:

Birth: Being born is very stressful for piglets, especially when farrowing takes a long time, the sow gets exhausted and the time between piglets becomes long. Weak piglets will not be able to drink sufficient colostrum. Good management of farrowing is essential for the vitality and survival rates of piglets.

Weaning: The next big step for piglets is weaning. Social stress (absence of the mother and her encouragement to drink), a changed feeding rhythm (piglets drink up to 24 times a day) and especially the transition to solid feed can cause digestion problems and subsequent diminished growth. All this stress also causes a reduction in natural resistance and a higher sensitivity to infections.

Feed changes: Any feed change is stressful to pigs, not just at weaning. Feed changes can consist of changes in protein, fat or carbohydrates, but also changes in raw materials (soy, cereals, etc.).

Care: Pigs get used to people. New caretakers (voice, composure) are perceived as unusual or strange and can lead to stress in the animals.

Intervention: It used to be common practice to castrate male pigs, dock piglets' tails and nip their teeth. Such interventions are particularly stressful. Modern, welfare-oriented pig husbandry tries to eliminate these interventions or use additional measures such as anaesthetics.

Meticulous and intensive monitoring of the animals is essential during all the stress moments mentioned above.

2.3 How to use this publication

The following chapters present examples of natural products that can be used at the stress moments mentioned above or for particular organ systems. The products mentioned are common herbal products, with a known effect on health problems. However, specific dosages and instructions for use on pigs are not available in many cases. A summary of all medicinal herbs that are used in comparable cases on humans can be found in the alphabetical list of herbs in Annex 3.

Commercial and readily available natural products are also included in this booklet (addresses of suppliers can be found in Annex 1). Annex 2 contains background information on the application and use of natural products. Annex 3 consists of an alphabetical list of herbs, detailing the active substances, application and products made of these herbs.

3 Using natural products

3.1 Sows in the farrowing pen

Some days before the expected date of farrowing, sows will be brought to the farrowing pen in small groups. This move is the start of the preparations for the birth of the piglets.

Management:

- Hygiene: all in, all out. Farrowing pens should be cleaned thoroughly between rounds and also disinfected in case of health problems. Sows should be washed before entering the farrowing pen and manure should be cleared away regularly;
- Water and feed should be fresh and tasty. The intake of water is particularly important, a nipple will provide 1,5 - 2 litre per minute;
- The sow's manure should be soft before farrowing. When manure is too solid, E-coli bacteria can grow and cause mastitis in the sow and diarrhoea in the piglets. It will also cause slower farrowing.
- Calm and quiet in the pen are essential during farrowing. Otherwise the oxytocine production of the sow will diminish and time between piglets will rise. If oxytocin production is sufficient, the sow will accept the piglets more readily for suckling and the colostrum and milk production will be better.



Flax (linseed) is a laxative

Natural products:

- Linseed (oil) has a laxative effect and can be used to prevent or cure constipation;
- Magnesium sulphate / kieserite / Epsom salt is another useful laxative;
- Coffee helps against weakness, stimulates appetite and activates intestinal tract;

- Herbs such as echinacea, cinnamon and garlic support the immune system and combat infections;
- Yucca and quillaja improve feed intake and lactation (and reduce ammonia);
- Oregano counteracts the growth of bacteria;
- Anise stimulates feed intake;
- Stinging nettles contain many minerals and trace elements, such as calcium, magnesium, zinc and selenium and healthy fats such as linoleic acid and linolenic acid. Nettles also drive urine production;
- Savin juniper causes the uterus to contract (Note: poisonous, only use registered products such as Uterale)

When in doubt about the health of a sow, always take the animal's temperature. Should this be higher than 39,5 °C (103.1 °F) treat with painkillers and perhaps antibiotics.

The table below lists the natural products that can be used for each management goal, in both sows and piglets.

Product	Application	Composition	Use	Supplier
Preparing the sow for farrowing				
Epsom salt	Constipation, thick manure	Magnesium sulphate	Dissolve in water: 15-30g per animal; in mouth	Pharmacist or Schippers
Fresta F	Stimulates feed intake, faster farrowing	Essential oils, flavonoids, capsicum, pepper, garlic and linseed	Mix through feed or spread on top	Delacon (distributed by Greenvalley International)
Linseed oil	Constipation, thick manure	Linseed oil	In mouth (1-2 tablespoons per sow/day)	Pharmacist or health food store
Colosan	Constipation, thick manure	Linseed oil, cinnamon oil, anise oil, fennel oil, caraway oil	In mouth	ECOstyle
During or just after birth				
Coffea	Booster when weak	<i>Coffea arabica tosta</i> (Coffee) arabinoglycans	In mouth	ECOstyle
Uterale	Induces contractions of the uterus	Juniperus sabina	Twice daily 1 table spoon	Virbac
During lactation				
Biomin P.E.P	Improving feed intake, countering the growth of E-Coli in the bowel.	Oregano, anise	Mix through feed	Biomin
Bio Gin	Improving vitality	Nettles and eleutherococcus, a.o.	Sprinkle on feed or put in mouth	Vossen laboratories

Product	Application	Composition	Use	Supplier
De-odorase	Stimulates feed intake and lactation, reduces ammonia	Yucca	Mix through feed	Alltech
Yucca liquid, Yucca powder	Stimulates feed intake and lactation, reduces ammonia	Yucca	Mix through feed or drinking water	Jadis
Viktus Speciaal	Improves feed efficiency	Seaweed and herbs	Mix through feed	Vossen laboratories
Immulon	Helps with infections	Echinacea	Injection, in mouth or over feed	ECOstyle
Microbioticum	Diseased sow	Echinacea, garlic and other herbs	In mouth (4-6 times daily, 10 ml)	Ineko



3.2 Piglets in the farrowing pen

For piglets, the early stages of life are particularly important and largely determine the piglet's development and natural immune system.

Management:

- Colostrum is a necessity for a healthy start. Make sure all piglets can drink sufficient colostrum during the first 24 hours;
- Floors should be rough, but not overly so: to prevent wounds on legs and knees;
- Hygiene: the pen should be clean and dry. Manure is to be removed regularly to prevent diarrhoea in piglets;
- Climate: the creep area is very important to piglets, it needs to be warm and spacious enough for all piglets. Piglets belong in the creep area, if they lay against the sow for warmth; this means something is wrong. Laying with the sow increases the chances of crushing.
- Tasty feed should be provided in bowls that allow multiple piglets to feed at the same time, as this increases feed intake. Drinking water should be made available as soon as the piglets eat solids.

Natural products:

Diarrhoea (birth diarrhoea and weaning diarrhoea caused by E. Coli bacteria) can kill piglets. The most important therapeutic intervention in cases of diarrhoea is **to balance electrolyte and fluid levels**. In case of severe diarrhoea the animals will dehydrate within a few hours (animals become weak and skin flap stays upright). In these cases balanced electrolyte solutions should be given immediately. In support of this measure, a number of natural products can be used.

Nutrition-related diarrhoea

- Charcoal: the best-known product against diarrhoea is charcoal (Norit). This fine-grained powder can bind water thanks to its large surface area. It also binds a number of bacterial toxins and harmful substances. Because charcoal also binds vitamins and other important nutrients, it can only be used for a few days in a row.
- Pectins (as are found in apple peel) absorb fluids and stop diarrhoea.
- Kaoline is a clay product, that absorbs bacteria, (bacterial) toxins and water. Like charcoal it also absorbs nutrients and should not be used for prolonged periods.
- Bilberry juice (*Vaccinium spp.*) works against mild diarrhoea (also has mild anti-inflammatory effect)
- Oregano (oil) has a mild antibacterial effect and can be used in case of mild diarrhoea to counter the growth of E. Coli bacteria.

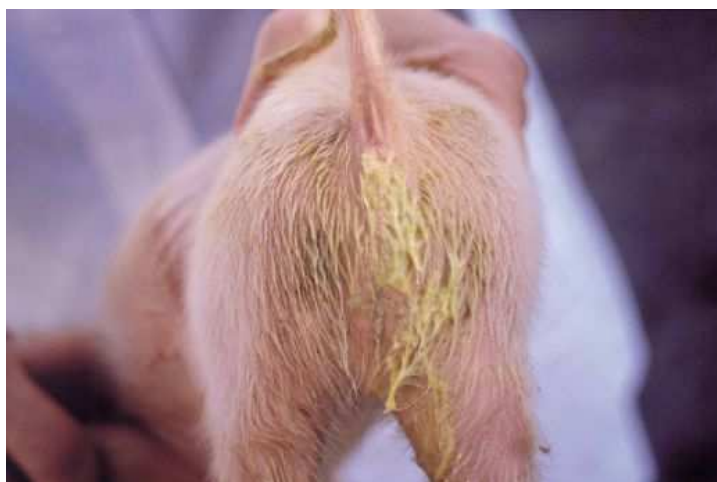
Colostrum and more: Colostrum contains important antibodies against (farm-specific) pathogens. Drinking enough colostrum is essential for the healthy development of piglets. It can be a good idea to create additional supplies of colostrum from good sows in your freezer. In addition to colostrum, or in cases of low production, a number of products can be used. These products usually combine energy-rich nutrients, vitamins, minerals and sometimes dried colostrum. Only a number of products are mentioned in the table below, there is a whole range of other options available from feed suppliers and stores.

This table lists natural products that can be used for piglets.

Product	Application	Composition	Use	Supplier
Immediately after birth				
Klausan	Disinfecting the navel	Camomile, marigold, oak bark, balsam of Peru, larch resin	Spray on navel	ECOstyle
Melissengeist spray	Stimulates respiration, immediately after birth	Oil of lemon balm and other herbs	Spray in mouth	ECOstyle
During lactation				
Bio Gin	Improves vitality	Nettle and eleutherococcus a.o.	Sprinkle on feed or put in mouth	Vossen laboratories
Colostrum	Improves vitality	Cow colostrum	Sprinkle on feed or put in mouth	Arts Cattle Improvement
Colo-active plus	Supplement in case of low colostrum supply	Cod liver oil, lactose, colostrum, vitamins	In mouth	Schippers
Prefexan Proforte	Supplement in case of low colostrum supply	Vitamins and <i>Enterococcus faecium</i> , milk powder and dextrose	In mouth	Trouw
Trobig Lifestart	Supplement in case of low colostrum supply	Vitamins and <i>Enterococcus faecium</i> , melkpoeder en dextrose	In mouth	Trouw
FeLIQs	Replaces iron injection, stimulates intake of water	Iron, sugars	In water bowl during first week	Jadis
Ferrosol	Replaces iron injection, supports digestion	Iron, acids	In water bowl during first week	Schippers
Fresta F	Stimulates feed intake and use	Essential oils, flavonoids, capsicum, pepper, garlic and linseed	Mix through feed or sprinkle on top	Delacon (distributed by Greenvalley International)

Product	Application	Composition	Use	Supplier
Against birth and weaning diarrhoea				
Electrolyte solution	Balances hydration	Electrolytes (salts) and sugar	Dissolve powder in water and put in mouth	Farm stores
Charcoal (Carbo vegetabilis)	Against diarrhoea	Binds water and (bacterial) toxins	Dissolve powder in water and put in mouth	Pharmacist (Norit granulate)
Kaopectate	Against diarrhoea	kaolin and pectin	In mouth	Pfizer
Ropadiar emulsion	Against diarrhoea	Organo oil	Pump in mouth	Ropapharm
Roosvicee stop	Against diarrhoea	Bilberry juice	Mix in water, put in mouth	Supermarket

Yellow diarrhoea can indicate coccidiosis in piglets and should be treated with a specific product against coccidiosis. Untreated animals run the risk of significant growth deficiencies.



3.3 Intestinal health and resistance against diseases

The bowel contains the mesenteric/gut lymphatic system, which plays an important role in the natural resistance against infectious diseases. This means that health problems in the gut not only cause diminished growth, a higher feed conversion ratio and sometimes diarrhoea, but will also reduce the general resistance of the animal. Pigs of any age with poor intestinal health will also display more respiratory problems. In short: intestinal health plays a central role in pig health in general.

Management:

- At least one feeder and one drinker should be available for every 10 animals. In the farrowing pen and in case of weaned piglets there should be more (at least one for every 6 animals).
- Quality and freshness of feed needs to be safeguarded (fungi and mycotoxins can diminish feed intake and intestinal health).
- Prevent drastic or sudden feed changes.
- When diarrhoea is a problem, hygiene is of the utmost importance. All in –all out is a prerequisite, but also changing boots when entering a pen with diseased animals and using separate utensils is important.

(Vibronic) dysentery

Dysentery or vibronic dysentery, caused by *Brachyspira Hyodysenteriae* bacteria deserves some special attention here. It can cause big losses in production and is very hard to get rid of in housing systems with closed floors. In case this disease is present, a very strict hygiene policy is required. This policy should be followed to the letter and antibiotics need to be given until the disease is completely under control. Only then, can natural products such as those mentioned below start to be used.

Natural products:

Four groups of natural products are important to intestinal health:

- Prebiotics: macromolecules such as cell walls of (dried) yeast; these improve the composition of the intestinal flora;
- Probiotics: live bacteria that ‘push out’ pathogens;
- Organic acids;
- Herbal products that influence unwanted gut bacteria and stabilise intestinal flora especially in cases of stress and feed changes.

Mixtures of organic acids are also on the market as feed additives. These substances have a mild antibacterial function in the pig’s gut. They can counter *Salmonella* and *E. coli* and improve the composition of the intestinal flora.

Note: Prebiotics and probiotics are required to have a compulsory registration as a feed additive under European regulations (EC 1831/2003). During the registration process, the effectiveness and safety of these products is tested by a government agency. Only products with a proven effect will be registered.

Herbs

- Herbs such as oregano, rosemary, thyme and garlic have an antibacterial effect against unwanted (Gram negative) bacteria. They also improve the taste of feed;
- Sage leaves can be given in case of (bacterial or viral) infections and bowel cramps (colic symptoms);
- Ginger roots improve digestion, prevent vomiting and has an anti-inflammatory effect;
- Chicory and Jerusalem artichoke contain inulin, a good food source for healthy bacteria in the colon;
- Echinacea and turmeric improve natural immunity;
- Liquorice (*Glycyrrhiza glabra*) can be used against stomach problems.

Product	Application	Composition	Use	Supplier
Herbs				
Oregano, rosemary (acid), thyme and garlic	Intestinal health	Essential oils with antimicrobial function	Dried leaves and thee (or dried garlic)	Grocery store or herb store
Sage <i>Salvia officinalis</i>	Intestinal health	Examples: thuyon and picrosalvin, organic acids	Dried leaves	Herb store
Ginger <i>Zingiber officinalis</i> wortel	Intestinal health	Essential oils rich in esquiterpenes	Through feed	Grocery store or herb store
Commercial products				
Bio Colon	Intestinal health	Herbs such as camomile and plantain	Sprinkle on feed or put in mouth	Vossen laboratories
Bio Gin	Improves vitality	Herbs such as nettles and ginseng	Sprinkle on feed or put in mouth	Vossen laboratories
BioMin P.E.P.	Intestinal health (antibacterial and prebiotic)	oregano, anise, chicory	Through feed	BioMin, through Panagro
Bio-Moss	Intestinal health (prebiotic)	Yeast cell walls	Through feed	Alltech
CC-HG	Neutralises acidity in the stomach	Calciumcarbonate with oxidative activity	Through feed	Holland Green
DiamondVXP	Intestinal health (prebiotic)	Yeasts	Through feed	Speerstra
Digestamine	Intestinal health (antibacterial and supports digestion)	Several herbs	Through feed	Speerstra
Digextra	Intestinal health, sequesters mycotoxins and helps against diarrhoea	Fibre, especially lignin	Through feed	Arts Cattle improvement

Product	Application	Composition	Use	Supplier
Fresta F	Stimulates feed intake and use	Essential oils, flavonoids, capsicum, pepper, garlic and linseed	Through feed (mix or sprinkle on top)	Delacon (distributed by Greenvalley International)
Easy-straw	Drying effect, easily digestible, supports intestinal health	Thermally treated straw, no dust	On the floor, bedding	Dansk Dyrestimuli A/S Through Samed B.V.
Kanters acid	Intestinal health (antibacterial and supports digestion)	Thyme oil and organic acids	In drinking water	Kanters
Microbioticum	Improves general resistance	Echinacea, garlic and other herbs	In drinking water	Ineko
Mycofix	Sequesters mycotoxins and supports the liver	Clay minerals and milk thistle		Biomin, through Panagro
Ropadiar	Intestinal health (antibacterial and supports digestion)	Oregano	Through feed and in drinking water	Ropapharm
Viktus Speciaal	Improves feed utilisation	Seaweed and a number of herbs	Through feed	Vossen laboratories



Oregano in flower



Yeast powder

3.4 Respiratory health

Lung diseases in pigs are caused by both bacterial pathogens and viruses. Regular occurrences of respiratory problems indicate poor natural disease resistance (See chapter 3.3) or inadequate management (ventilation).

Management:

- Climate should be fresh, dry and without draughts. Check climate settings regularly;
- Hygiene: all in, all out, no overpopulation, don't mix groups, do not place animals back into their former group after they have been in the sick unit;
- Presently, research is carried out into products that may improve digestion and thus reduce ammonia in the housing systems. More information is expected to become available during 2011.

Natural products:

- Essential oils of eucalypt, thyme and peppermint improve dissolution of mucous and have a mild antibacterial effect;
- Garlic has an antibacterial and anti-viral effect and is excreted partly through the lungs;
- Echinacea, ginseng and turmeric improve general resistance.
- Some products can be sprayed inside units to improve quality of air and breathing.

Product	Application	Composition	Use	Supplier
Herbs				
Thyme, peppermint, eucalypt	Respiratory problems	Essential oils	Tea or syrup	Herb store
Fennel or mixture of fennel, honey and water	Respiratory problems	Essential oils from plant and seeds	Tea or syrup	Grocery or herb store
Commercial products				
Allicin/DTS	Respiratory health (antibacterial)	Garlic extract	In drinking water	Cowhealth
Anihom	Against cough and lung problems caused by viruses	Pau d'arco and ivy	In drinking water	Herbavita
Bio Pulmo	Supports respiratory system	Peppermint, thyme and other herbs	Sprinkle on feed or put in mouth	Vossen laboratories
Bronchimax	Respiratory health	Echinacea, thyme	In drinking water	Herbavita
Enteroguard	Respiratory health (antibacterial)	Garlic and cinnamon	In feed	Orffa
Products used to improve the air				
Aeroforte	Improves air	peppermint, eucalypt, menthol	In drinking water or spray	Kanters
PP100	Improves air	eucalypt, mint and anise	Spray in units	Veeservice IDAC

3.5 Sows

Sows often suffer from urinal infections after the piglets have been weaned. This has a negative effect on their health and on the results of servicing.

Management:

- Use good quality feed;
- Pay attention to feed changes;
- Monitor fitness levels and back-fat levels of sows during the entire cycle, consult breeding advisor;
- Manage feed curves, sows should not lose more than 5 mm of back-fat during the farrowing stage. If sows are too thin around insemination and in the first stage of gestation there is a risk that birth weights of the piglets will be too low. Sows should also not become too fat, since this will cause more problems around farrowing.



Sage flower

Sage has traditionally been used in popular medicine at the start of the dry period. It diminishes milk production and has antibacterial properties. It also has an anti-inflammatory effect on the intestinal tract and improves bile production. Use 5 to 10 grams of dried sage leaves per sow, or give sage tea.

Product	Application	Composition	Use	Supplier
Herbs				
Buchu <i>Agathosma betulina</i> or <i>Barosma betulina</i>	Infections of the urinal tract or bladder in humans and animals	isomenthone and phenols	Dried leaves, tea	Herb stores
Nettle <i>Urtica dioica</i>	Increases urine volume	Complex mixture containing flavonoids, quercitin, camphor oil, organic acids	Fresh plant, leaves, tea of leaves and roots	Nature stores and herb stores
Commercial products				
Biomin pHD	Prevention of bladder and urinal infections; improving results of insemination	Cranberry	Through feed	Biomin

3.6 Skin lesions and cannibalism

Skin lesions (even small ones) can lead to painful infections and increase chances of cannibalism.

Another common skin problem in piglets is greasy pig syndrome (*Staphylococcus hyicus*). It causes visible changes to the skin. Sows carry these bacteria and piglets with low immunity often get sick. Proper hygiene and improving immunity can prevent this problem.

Management:

- Housing systems should be free of anything that can wound the animals;
- Disinfect all wounds caused by fighting;
- Provide peace and quiet, prevent stress caused by draught, overpopulation or changed composition of the groups;
- When the animals have outdoor access, make sure to provide sufficient shade to prevent sunburn, or keep the animals inside during the hottest hours of the day.

Natural products:

- Aloe, thyme, lavender, basil and honey have antibacterial properties and support healing of wounds;
- Products containing Witch-hazel (*Hamamelis virginiana*) can dry out and disinfect wounds and improve healing of infected wounds and lesions;
- Ointments and lotions containing St. John's wort (*Hypericum perforatum*) are recommended to treat painful wounds;
- Staghorn fern oil has a bad taste and prevents tailbiting when rubbed on the tail or sprayed on the ears.

Product	Application	Composition	Use	Supplier
ACEderm spray	Supports healing of wounds	Peru balm	Spray on wound	Veeservice IDAC
Aloe (<i>Aloe barbadensis</i>)	Antibacterial and supports healing	antrachinones	Lubricate	Grocery stores
Anti-bite spray	Against tail and ear biting	Staghorn fern oil	Spray on tail	Veeservice IDAC
Dermiel wound spray	Antibacterial and improves healing	Honey, lavender, thyme and basil a.o.	External (spray)	AST
Staghorn fern oil	Against tail and ear biting	Staghorn fern oil	Sprayed on tail	Farm shops
Calseapig	Mineral lick stone	Minerals and seaweed	Place lick stone in pen	Timac agro

3.7 Claw health and lameness

Claw problems are among the most common health problems in sows, especially during gestation. The main causes for claw problems in piglets and gilts are bad floors and inadequate nutrition. Coloured (pigmented) claws are stronger than non-coloured claws. In several pig races claws need to be trimmed regularly.

Management:

- Dry, clean and solid (but not tough) floor;
- Dry outdoor run or meadow and sufficient exercise;
- Do not use animals with a deviant posture of the hind legs for breeding;
- Make sure to provide balanced nutrition with sufficient minerals and biotin, that is in line with the animal's growth. Pay special attention to breeding gilts;
- Clean floors regularly and trim claws when necessary.

Natural products:

- The best known product is laurel oil or ointment containing laurel oil (*Laurus nobilis*). This oil disinfects and heals wounds and improves the quality of the horn;
- In case of infections of the footsole, use drying ointments containing camphor, turpentine and zinc oxide;
- Marigold (*Calendula officinalis*) products contain disinfecting terpenes and flavonoids and carotenes with anti-oxidative properties. These products are recommended to care for claws and the adjacent skin (coronary band);
- Painful joints can be treated by feeding the animals willow twigs or bark (*Salix alba*), which contains a number of anti-inflammatory substances;
- Aloe vera has antibacterial and anti-inflammatory properties and soothes the skin. Camomile and Peru balm also have antibacterial properties and provide skincare;
- Diatomite can absorb a lot of moisture, making the environment dryer.

Product	Application	Composition	Use	Supplier
Actiplus	Dries and disinfects the environment	Seaweed	Sprinkle on floor	Timac Agro
Dermiel wound spray	Antibacterial and improves wound healing	Contains a.o. honey, lavender, thyme and basil	External	AST
Easy-straw	Dries and sequesters ammonia	Thermally treated straw, free of dust	On floor as bedding	Dansk Dyrestimuli A/S Via Samed B.V.

Product	Application	Composition	Use	Supplier
Klausan	Improves wound healing	a.o. camomile, marigold, oak bark, Peru balm	Spray on claws	ECOstyle
Mistral	Dries	Diatomite, essential oils	Sprinkle on floor	Olmix



Wolf's bane or mountain Arnica (*Arnica montana*)

Wolf's bane or mountain Arnica (*Arnica montana*) was used against a number of ailments in the past. However, the plant contains the poisonous substance helenalin. That is the reason that for internal uses only homeopathic products are available. External use as an ointment against painful muscles and joints is free of unwanted side-effects.

3.8 Worms

The main goal of organic pig husbandry is to keep infection by worms as low as possible. One of the biggest risks is infection with *Ascaris suis*, especially in pigs that regularly use the same outdoor run or meadow.

Worms have a life cycle of about 5 to 6 weeks when temperatures are above 20 degrees Celsius in a humid environment. Eggs laid by mature females are spread around through manure. These eggs are insensitive to disinfectants! In a liquid manure pit eggs may not survive, but in housing systems with solid floors they will be very hard to get rid of.

Prevention is key: make sure no adults are around to lay the eggs in the first place. A number of studies have been done on the effect of herbs against worms, but so far no convincing results were achieved. Although the search continues, for now it is advisable to use regular (non-natural) products to regularly de-worm the animals in consultation with your vet.

Management

Prevent worm infections through cleaning, disinfection and soil management.



Tansy (*Tanacetum vulgare*)

Tansy (*Tanacetum vulgare*) was used in popular medicine against tapeworm and roundworm. However, the worms are only expelled by the poisonous substances of the plant. External use of the oil of this plant against scabies is safe.

Natural products

Drastic products that expel worms, such as castor oil, calomel and turpentine are no longer acceptable from an animal welfare point of view. Besides, they are not very reliable. Tansy also contains a number of toxic substances that restrict its use as medication against worms. Tansy oil is ok to be used against scabies.

To contain worm infections you can use garlic, horseradish, *Aloe vera* essence, pumpkin seeds, thyme and cinnamon. Despite their worm-expelling properties, the effectiveness of these herbs is insufficient in case of existing infections.

3.9 Skin parasites

Skin parasites such as mites and lice can be treated externally with a number herbal essences:

- Tansy (external use)
- Watery essence of nettles (*Urtica dioica*)



Stinging nettle (*Urtica dioica*)

4 Hygiene management and feed quality

4.1 Hygiene and manure

Management

Hygiene: regularly cleaning the unit and farrowing pens helps to reduce the number of harmful pathogens present, and thus the risk of diseases.

Natural products

Natural products that promote hygiene, come in a wide variety. One group of products is based on enzymes, which inhibit bacterial growth and break down the biofilm bacteria live on.

Another option is to apply a mixture of so-called 'good bacteria' after cleaning and disinfecting the houses. These products are based on EM (Effective Micro-organisms); they reduce ammonia emissions and diminish the risks of diarrhoea.

Saponins are plant compounds which help reduce ammonia emissions, among other properties. Products supplied by Greenvalley are currently under scientific review. Results are expected later in 2011.

CC-HG is supposed to help intestinal health and reduce ammonia emissions drastically. The latter claim is to be tested in 2011 or 2012.

Product	Application	Composition	Use	Supplier
Actiglene	Treatment of manure	Minerals from seaweed	Sprinkle on grid or in manure pit	Timac Agro
Aromex/ Biostrong	In case of ammonia emissions	Yucca, soapwort	In feed	Delacon via Greenvalley International
CC-HG	In case of ammonia emissions	Calcium carbonate	In feed	Holland Green
Panazym	Reduces bacterial growth and breaks down biofilm	Enzymes	Foam in units according to leaflet	Panagro
PIP AHC PIP AHS PIP Water plus	Reduces growth of unwanted bacteria	Good bacteria	See directions for use	Chrisal
Orgaferment	Treats pens and straw	EM and yeasts	Spray	Panagro
Orgabase	Treats pens and straw	EM and wheat bran	Sprinkle	Panagro

4.2 Fly control

Management

- Hygiene: create a clean and dry environment and get rid of feed waste;
- Climate: provide well-ventilated, fresh units;
- Providing nesting opportunities for swallows also contribute to fly control.

Natural products

A well-known product against flies and other insects is citronella (essential oil of lemon grass or *Cymbopogon*). This oil can also be used to treat skin parasites. Citronella is often confused with *Pelargonium citrosum* or Mosquito plant. The latter only contains a few of the active compounds of citronella and has a significantly diminished effect.

Product	Application	Composition	Use	Supplier
Agra predatory fly	Natural enemy of stable flies	Predatory flies	Put pupas in the barn	Agrapharm
Agrapharm predatory wasps	Natural enemy of stable flies	Predatory wasps	Put pupas in the barn	Agrapharm
Exfly cattle spray	Deters flies using odour	Biological lure	Spray	Prolako
Spy	Deters flies	Spinosad	Several options, see directions for use	Novartis (through vet)

4.3 Herbal mixtures for meadows

A large number of herbs can be used to sow in meadows. These herbs may have a direct positive effect on animal health, but they can also work in an indirect manner, for example by improving the uptake of minerals and improving digestion (nettle is an example).

PureGraze is a herbal mixture for meadows that contains – among others – chicory, parsley, plantain, caraway, stinging nettle and yarrow.



4.4 Silages

Silages have become an important component of pig feed in recent years. Silage is susceptible to rotting (when too moist or too dry). Making good silage and tasty heap requires knowledge and experience.

Management

- Spread grass or other silage-material well and compact the silage heap properly. Work as fast as possible and put an airtight cover over the heap within the same day.
- Protect the plastic cover with additional measures such as a layer of soil or car tyres.
- The silage heap should be of a suitable height: each week at least 1,25 meter needs to be fed to the animals.
- Check heaps for fungal growth, remove spots on the sides and check maize silages for mycotoxins.

Natural products

Lactic acid bacteria and organic acids lower pH and can prevent rotting (heating, *Clostridium* growth). EM is short for Effective Micro-organisms, which form lactic acid and other positive organic acids. These EM's are added when making silages. Some examples of EM additives can be found in the following table.

Product	Application	Composition	Supplier
Bon Silage Plus	Improves fermentation and reduces heating	EM: lactic acid bacteria	Barenbrug
EM-silage	Quickly lowers pH	Bacteria and yeasts	Agriton
Feedtech silage F300	Quickly lowers pH	EM: <i>Pediococcus</i> & <i>Enterococcus</i>	Delaval
Feedtech silage F400	Prevents heating	EM: <i>Lactobacillus buchneri</i>	Delaval
Sil-All Fireguard	Prevents heating, improves silage quality in maize silage	Organic acids and lactic acid	Alltech
Sil All	Improves quality of grass silage	Bacteria and enzymes	Alltech
Pioneer Silage 11A44	Slows heating in silage with a dry matter content > 30%	EM: <i>Lactobacillus buchneri</i>	Pioneer
Silage Inoculant 1188	Quickly lowers pH	Lactic acid bacteria	Pioneer
Product	Application	Composition	Supplier
Silage Inoculant 11G22 WOB	Breaks down cellulose	EM and enzymes	Pioneer
Lalsil dry	Improves fermentation in silage heaps with low sugar content and high percentage of dry matter	EM : Cellulolytic enzymes and lactic acid bacteria	Lallemand SA
Lalsil PS	Improves fermentation	EM: Lactic acid bacteria	Lallemand SA
Lalsil CL	Improves fermentation in silage heaps with low sugar content and average percentage of dry matter	EM: Lactic acid bacteria	Lallemand SA

Laslil fresh	Diminishes heating in maize silages	EM: <i>Lactobacillus buchneri</i>	Lallemand SA
Ecosyl 66	Improves fermentation grass silage	EM: <i>Lactobacillus plantarum</i>	Ecosyl
Ecobale	Improves fermentation, reduces heating	EM: <i>Lactobacillus plantarum</i> , <i>Serratia rubidaea</i> , <i>Bacillus subtilis</i>	Ecosyl
Double action Ecocorn Ecosyl Ecobale	Improves fermentation, reduces heating in maize silages, grass or hay silage, bales	Potassium sorbate, lactic acid bacteria	Ecosyl



Lactic acid bacteria

Annex 1: Producers and suppliers

Producers	Suppliers	Products
Agrapharm	Veeservice IDAC www.veeserviceidac.nl 00-31-416-379955	Agra predatory fly Agrapharm predatory wasp
Alltech	Alltech www.alltech.com 00-31-180-41103	Bio-Moss De-odorase
Arts Cattle Improvement	Arts Cattle Improvement www.artscattleimprovement.nl 00-31-73-6136713 00-31-6-53447516	Colostrum Digextra
AST Farma	AST Farma www.astfarma.nl 00-31-348-563 434 Through veterinarian	Dermiel spray
Barenbrug	Barenbrug www.barenbrug.nl 00-31-24-34 88 100	Bon silage maize Bon silage CCM Topform plus
Biomim	Via Panagro www.panagro.be 0032- (0)33 149 693	Biomim P.E.P 1000 Biomim pHD Mycofix
Boerenwinkel	Boerenwinkel www.boerenwinkel.nl 00-31-548-545 277	Staghorn fern oil
Cowhealth	Cowhealth www.cowhealth.nl 00-31-6-2454 8292	Allicin/DTS
Chrisal	Chrisal België www.chrisal.be 00-32-11 54 80 00	PIP AHC PIP AHS PIP Water Plus
Dansk Dyrestimuli A/S	http://www.easy-stroe-shop.dk/ through Sambed B.V. Dhr. A. Wijne www.strawbase.nl 00-31-55-5051333 00-31-6-54778944	Easy-straw
Delacon	Greenvalley International B.V. www.greenvalleyinternational.nl 00-31-317-479732	Fresta F Aromex Biostrong
ECOstyle / dr Schaette	ECOstyle / dr Schaette www.ecostylevoordieren.nl 00-31-516-567 760 Through vet / Veesservice IDAC www.veeserviceidac.nl 00-31-6-51 545 721 Agradi, www.agradi.nl 00-31-73-522 66 11	Coffea Colosan Immulon Klausan Melissengeist Ademspray ProMotion

Producers	Suppliers	Products
Holland Green	Holland Green www.hollandgreen.nl 00-31-416-316535 00-31-6-53779051	CC-HG
Kanters	Kanters www.kanters.nl 00-31-499-425600	Aeroforte Kanters acid
Herbavita	Herbavita www.herbavita.eu 003255388959 info@herbavita.eu	Anihom Bronchimax
Ineko	Ineko www.microbioticum.eu 00-31-592-371741	Microbiotics
Intracare	www.intracare.nl Through Agradi www.agradi.nl 00-31-73-522 66 11	Intra-bath Intra-Hoof-fit
Jadis	Jadis www.jadis-additiva.nl 00-31-23- 53 13 898	FeLIQs Yucca Liquid Yucca Powder
Novartis	Novartis 00-31-76-533 0020 Or through veterinarian	Spy
Olmix	Olmix www.Olmix.com 00-31-26-3842015	M-Mistral
Panagro	Panagro www.panagro.be 0032- (0)33 149 693	Panazym Orgaferment Orgabase
Pfizer	Pfizer www.pfizerah.nl Through veterinarian	Kaopectate
PureGraze	Pure Graze www.puregraze.com 00-31-6-1314 6161	Herb seeds Clover seeds
Ropapharm	Ropapharm www.ropapharm.nl 00-31-75- 614 4143	Ropadiar emulsion Ropadiar liquid Ropadiar powder (GG30) Diamol
Schippers	Schippers www.schippers.nl 00-31-497-339 771	Colo-active plus Epsom salt Ferrosol
Selko	Selko www.selko.com Through Trouw Nutrition 00-31-134-680 333	Selko4health

Producers	Suppliers	Products
Speerstra Feed Ingredients	Speerstra Feed Ingredients www.speerstra.com 00-31-514-569001 mail@speerstra.com	Diamond VXP Digestamine Chicory pulp (FOS)
Timac Agro	Timac Agro www.nl.timac.agro.com 00-31-6-2180 5326 00-31-73-640 8620	Actiglene Actiplus Calseapig lick stone
Trouw Nutrition	Trouw Nutrition www.trouwnutrition.nl 00-31-134-680333	Prefexan Porforte
Veeservice IDAC	Veeservice IDAC www.veeserviceidac.nl 00-31-416-379955	Anti-bite spray PP100
Virbac	Virbac www.virbac.nl 00-31-342-490164 Through veterinarian	Uterale
Vossen laboratories	Vossen Laboratories www.vossenlaboratories.nl 00-31-495-583400	Bio Gin Bio Pulmo Bio Wean Viktus special

Annex 2: Background information on natural products

Choosing natural products

Organic agriculture prefers natural products when treating animals. But what exactly is a natural product? The distinction between natural and non-natural products can be made in two ways; based on technical properties of the product or based on the motivation of the user.

Technical distinction: production methods

The raw materials for natural products are derived from nature. This means: the molecules have not been changed in a laboratory, the product is of *biogenic origin*. A simple example is willow bark. This is a natural product that has been used for thousands of years to boil a tea that treats fever and pain. This tea contains many active ingredients. One of these was isolated - salicylic acid – and from 1900 onwards sold as medication. This isolated substance caused severe stomach aches, so improvement was necessary. An acetic group was added to the salicylic acid; we still know this combination as aspirin. This is no longer a natural product; these days it is made entirely out of synthetic substances.

Another example: To isolate carvacrol (a disinfectant) from oregano we also need a laboratory. To some people that means this substance is no longer natural. The distinction is not made in the same manner by everyone. Carvacrol can be produced synthetically from different raw materials than oregano. In those cases it certainly isn't a natural product, but there is no chemical difference with 'naturally produced' carvacrol.

Phytotherapy uses plant products that still have a natural complexity. The willow bark example shows that natural products are not always harmless. It is also important to know which parts of the plant can be used and how to prepare them.

Motivational distinction: different objectives

Natural products can be opted for for a variety of reasons. Some examples are:

- Supporting the 'green' company image;
- Preventing or curing diseases without leaving harmful residues (no waiting time before products can go to market);
- Improving product quality (f.i. by increasing the unsaturated fatty acid content);
- Improving animal health without using environmentally harmful substances;
- Using methods and materials that would be available to the animal in the wild;
- Promoting animal health through management and relying as little as possible on medical treatments;
- Dealing with health issues while they are still small (instead of waiting for the situation to get out of hand and only treatable with fast-working medication).

Usually, complex natural products such as phytotherapeutics are chosen in organic animal husbandry. Singular synthetic products such as carvacrol or synthetic vitamins are a lot less popular. Preference lies with organically grown herbs. The sector aims to use 100% organically produced feed by 2012. Feed additives used to improve health should also be fully organic by then.

Important groups of natural products

Herbal mixtures or phytotherapeutic products are generally made from parts of herbal plants but can also be prepared from trees, algae, seaweed, lichen, yeasts or fungi. These products are often added to feed to improve taste and smell. Fragrant plants are used mostly, although odourless herbal mixtures do exist.

Because each plant can contain a variety of active substances (Annex 4), one herb or herbal mixture can have a number of effects. One plant can - for instance - increase appetite, have antibiotic and anti-inflammatory properties and calm coughing. A herb can be used in the form of dried or ground seeds, flowers or roots. It is also possible to derive an extract from it, with a high concentration of active ingredients and thus a stronger effect. Essential oils consist of isolated volatile (fragrant) components. Oregano oil is currently a much-used additive in animal feed.

A number of plant products cause very different reactions in different animal species. Poultry, for instance, has no problems with henbane, which is poisonous to many mammals. But poultry is also much more sensitive to saponins. Different products from the same plant, may cause very different reactions. Also, preparation and dosage influence the effect of the product.

Some herbs – garlic and cinnamon for instance - contain active substances that also combat pathogens when they have not (yet) been absorbed in the intestines. They resemble prebiotics in the sense that they hardly influence ‘good’ intestinal bacteria, such as lactic acid bacteria.

Phytogenic substances are very pure products that have been distilled from a plant extract (up to almost 100% purity). Examples are allicin from garlic, inulin from chicory, lignin from straw or wood and carvacrol from oregano. An interesting group of phytogenic substances are beta-glucanes, which are derived from the inside of yeast cell walls and from certain fungi. Beta-glucanes are used to increase resistance and bind toxins.

NGPs

A new group of additives is called ‘Natural growth promoters’ (NGP). These substances are also used in conventional agriculture to replace antibacterial growth promoters. NGPs often contain herbs that have long been used in natural medicine and organic agriculture. Examples are yarrow and garlic. A new phenomenon is the large-scale use of oregano oil and one of its substances, carvacrol.

Probiotics are feed supplements that consist of live micro-organisms, such as lactic acid bacteria, enterococci or beer yeast cells. Probiotics are used to support or recover the natural microbiological balance in the human or animal intestinal tract. Using probiotics is particularly helpful after an intestinal infection and possible use of antibiotics. A healthy intestinal flora can lead to a better general health, better growth and higher production, thanks to improved digestion and immunity.

Prebiotics are substances that enhance the development of the intestinal flora, without being absorbed by the animal. Indications are, that prebiotics also stimulate immune responses and prevent harmful bacteria from sticking to the intestinal walls. Prebiotics are generally phytogenic products. Examples are:

- Carbohydrates from yeast cell walls (MOS: Mannose oligosaccharides);
- Carbohydrates from plants, such as the decomposition products of inulin from Jerusalem artichoke or chicory roots (FOS: Fructooligosaccharides). FOS improves calcium uptake, but may be less specific for certain bacteria than MOS;
- Pectins (heterosaccharides) from citrus fruits, apples, potatoes or carrots.

Prebiotics and probiotics combine well; when used together they are called synbiotics or symbiotics.

Organic acids are used to improve digestion and added to feed or drinking water. Examples are folic acid, citric acid and long-chain fatty acids. These acids are often given as a salt. Organic acids lower the pH of the stomach and make feed more tasty and less perishable. In a more acid intestinal tract, the multiplication of bacteria such as E-coli and Salmonella slows down. Herbal products such as apple vinegar, wine vinegar and citrus extract work in the same way, because they mainly consist of organic acids.

Enzymes are proteins that work as catalysts. These substances manage a chemical conversion without being converted themselves. Examples are the enzymes that split starch, fat and proteins in the stomach, to help digest food. Enzymes are usually provided as chemically pure products. Herbal mixtures of papaya and pineapple also contain protein-splitting enzymes; these are generally used against worms which are damaged by these enzymes. Enzymes for disinfection of housing systems are also available on the market.

Other products mentioned in this guide are used for cleaning and disinfection and to improve the quality of floor and litter. These are products taken from nature without much processing, such as clay, sand, minerals, enzymes and acids.

Final remarks

Please note that homeopathy is not included in this guide, because it operates based on a specific philosophy.

Increased welfare and well-being of animals have a proven positive influence on disease resistance. This means that many simple and easily used products can be effective; including attention and care.

Annex 3: Alphabetical list of herbs

The following pages contain an alphabetical list of herbs.

The list is not definitive or complete, as products change continuously. Not all products are available everywhere (yet) and each plant contains more active substances – such as vitamins or minerals - than those that are mentioned here. The list gives a general indication of the herbs in natural products and cannot be used as the only guide for using a certain herb or natural product.

Additional information on the active substances mentioned in the list:

Alkaloids are small molecules that contain nitrogen. Often these substances influence the nervous system, sometimes in such a powerful way that are considered poisonous (i.e. caffeine or nicotine).

Bitter substances. Some plants have a bitter taste and increase the excretion of saliva and other digestive fluids through their effect on the taste buds. These bitter substances are small compounds that are poisonous in high dosages; the bitter taste signals danger. Bitter substances do not belong to a single chemical group.

Essential oils of plants are mixtures of volatile substances; they are what gives the plant its fragrance. These substances can differ enormously, but they are all small compounds. Some are very strong (like camphor) or very antibiotic (carvacrol or thymol). Some fragrances increase appetite, because they stimulate the secretion of digestive fluids. Other stimulate urine or sweat production.

Flavonoids provide flowers with a yellow or pink colour. Many flavonoids work as antioxidants (anthocyanin is an example). Some (isoflavones) are similar in chemical structure to oestrogen. In the plant, flavonoids are attached to sugar molecules.

Silicic acid hardens plants; it can be found in wheat stems, plantain, polygonum and horsetail for instance. In popular medicine silicic acid is used for stronger hooves, horns, hair, skin and feathers. Not much research has been done into this substance.

Tannins are large, somewhat acidic compounds, often made up of flavonoid-like substances. Tannins cause proteins and alkaloids to precipitate. This way, food becomes less digestible and tannins can have a detoxifying effect. They reduce diarrhoea and have antibacterial properties.

Saponins cause a soapy foam; when you rub plants containing saponins between your hands with water they de-grease your hands. Saponins bind both fat and water. When used in a herbal mixture they cause other substances to get absorbed. Saponins can irritate mucous membranes. Saponins from plants are often very large and complex molecules that are not absorbed themselves. In plants they often derive from hormone-like (steroid) compounds.

Mucilage consists of long carbohydrate chains that can create a gel with water (like linseed when it gets boiled). Plants containing mucilage have a soothing effect on, for instance, sore throats. In a high dosage, these substances have a laxative effect.

English common name	Botanical name	Part of the plant used	Main active substances	Products	Application
Absinthe wormwood, Wormwood, Absinthium	<i>Artemisia absinthium</i> ; <i>A. spp.</i>	herb	Bitter substances (f.i. artemisinin), essential oil (mainly thuyon and azulene)	Schweizer Kräuter Fit, Voralberger Bronchial-Kräuter	Digestion, increases appetite, against parasites.
Alder	<i>Sambucus nigra</i>	Flower, berry	Essential oil 0,02-0,15%, flavonoids	Alder blossom and berries	Improves digestion (blossom), treats respiratory problems (berries)
Algae	<i>Diatomeae spp</i> and <i>Fucus spp</i>	cells	chlorophyll, silicic acid (Diatomea) and iodine (Fungi).	Spicemaster, Ropadiar GG30 (D), Diamol	Increased uptake of feed, appetite and growth. Used against stress, supports resistance and metabolism, improves lactation.
Angelica	<i>Angelica sp.</i>	Root, seeds	Essential oil 1%, cumarine 0,08%, bitter substances	Melissengeist-Ademspray (Angelica oil)	Relieves respiratory problems, especially for young animals
Anise	<i>Pimpinella anisum</i>	seed	2-6% essential oil (containing 90% transanethol), 10-30% fatty oil and 20% proteins	PP100, Cuxarom, Multicon, P.E.P. 1000	Disinfectingair, growth, flatulence, intestinal problems
arnica	<i>Arnica montana</i>	flower	Bitter substances (sesquiterpene lactones), flavonoids and essential oil	Ointment for external use	Ointment used against infections of the joints, tendon problems and bruises.
Asiatic pennywort, gotu kola	<i>Centella asiatica</i>	Leaves	Triterpenes, saponins	Cothivet	Skin care
Blue cohosh	<i>Caulophyllum thalictroides</i>	Bark of roots	Alkaloids, saponins	Afterbirth capsule	Uterus infections
Calamus or sweet flag (do not gather in the wild – poisonous chemotype)	<i>Acorus calamus</i>	Root	Essential oil, 5% (mainly asaron), bitter substances	Powder nr. 3, Powder nr. 4	Stimulates stomach and digestive fluids (bile, pancreatic fluid), against diarrhoea
Camomile	<i>Matricaria chamomilla</i>	Flower	0,3-1,4% essential oil, (containing chamazulene and bisabolol), flavonenes, cumarines	Klausan tincture, Wundbalsem, Microbioticum, Cleanspray	Wounds, general health and production, resistance, infections, claw problems and care.
Camphor tree	<i>Cinnamomum camphora</i>	Resin from wood	Terpenoids (camphor)	Camphor Ichtyol ointment	External use: ointment for claws, skin infections and joints.

Carob	<i>Ceratonia siliqua</i>	seed pods	Sugars, mucilage, tannins	Caromic	Diarrhoea, irritation of the bowel.
Cat's claw	<i>Uncaria tomentosa</i>	Root, bark	Alkaloids (differs between chemotypes, up to 3%), β -sitosterol, flavonoids, tannins	Immunall	Resistance, prevention of diseases
Cayenne	<i>Capsicum frutescens</i>	Fruit	0,6-0,9% capsaicin, vitamin C	No specific products available for pigs	Improves metabolism and circulation.
Centauray	<i>Erythrea centaurium</i>	Herb	Bitter substances	Voralberger Bronchial-Kräuter	Digestion, improves appetite, general wellbeing and health.
Chicory	<i>Cichorium intybus</i>	roots	Bitter substances, flavonoids, inuline 30%	Fructomix, Fruba, P.E.P. 1000, Chichory pulp, Multicon, Prebiofeed, Urkraft Ferkel	Optimises intestinal flora (prebiotics)
Cinnamon	<i>Cinnamomum zeylanicum</i>	Bark	Essential oil 1-2% (containing 75% cinnamaldehyde and 5% eugenol), tannins 2%	Enteroguard, Melissengeist-Ademspray (oil), Rurex (Chinese cinnamon oil), RepaXol (oil, mixture of oregano, cinnamon, thyme and capsicum)	Stability of intestinal flora, watery manure, against diarrhoea and flatulence.
Cloves	<i>Eugenia caryophyllata</i>	Flower	Essential oil 20% (containing 90% eugenol), tannins 10%, flavonoids	Melissengeist-Ademspray (oil)	Relieves respiratory problems (especially in young animals)
Coffee	<i>Coffea sp.</i>	Bean	Caffeine, lipids, flavones, proteins, minerals (K, Mg, Mn)	Coffea and Immulon, Coffea praeparata inject	General health and fitness around stressful moments, improves respiration in young animals (directly postpartum), slight increase in urine production.
Coriander	<i>Coriandrum sativum</i>	Seed	Essential oil 0,2—1,6 % (70% linalool), fatty oil 15-25%, proteins 11-17%	Melissengeist-Ademspray (oil)	Relieves respiratory problems (especially in young animals)
Dandelion	<i>Taraxacum officinale</i>	Root or herb	Inulin (root contains up to 40% in autumn), bitter substances, flavonoids, several vitamins and minerals	CS82, Extenta	Digestion, prebiotic (inulin), dehydrating
Echinacea, purple coneflower	<i>Echinacea purpurea</i>	Root	Essential oil, polysaccharides, inulin	Microbioticum, Bronchimax, Immulon, Immunal	Resistance, prevents respiratory problems and mastitis, stabilises intestinal flora (inulin is a prebiotic).
Eucalypt	<i>Eucalyptus globulus or saligna</i>	Leaves	Essential oil 0,5-7% (75% cineol), tannins	Aeroforte, PP100	Improves air, respiration. When used as ointment: cools and mild disinfection for claws and joints.

Fennel	<i>Foeniculum vulgare</i>	Seed	Essential oil 2-6% (containing 60% trans-anethole), 15% fatty oil	Cuxarom, Digestarom, Melissengeist-Ademspray (fennel oil), Multicon	Prevents flatulence, digestive and respiration problems, especially in young animals
Fenugreek	<i>Trigonella foenum graecum</i>	Seed	Mucilage 30%, protein, fatty oil, saponins 3%, bitter slubstances	Fruba, Voralberger Bronchial-Kräuter, Urkraft Ferkel	General resistance and energy, digestion, respiration.
Garlic	<i>Allium sativum</i>	Bulb	Several sulphur compounds (allicin, thiocyanates), vitamins (A, B1, B2 , C), minerals (K, Fe, S, J, C, P, Se)	Enteroguard, Cuxarom, Urkraft Ferkel, Hygestin, Immunall, Microbioticum	Stability of intestinal flora, assimilation of nutrients, activates immune system, general resistance, promotes growth . Mild antibacterial effect, has positive influence on respiratory problems thanks to excretion in breath.
Gentian	<i>Gentiana lutea</i>	Root	Bitter substances	Powder nr. 4	Increases appetite, digestion and secretion of digestive fluids (pancreatic fluid and bile).
Ginseng	<i>Panax ginseng</i>	Root	Saponins, 1,5 % specific sugars, essential oil	Immunall	Growth, general resistance and energy levels
Goldenrod / woundwort	<i>Solidago virgaurea</i>	Herb	Saponins, tannins, essential oil about 0,5%, flavonoids	Multicon	Stimulates urine production
Heartsease	<i>Viola tricolor</i>	Herb	saponins, flavonoids, salicylates	Microbioticum, Immunall	Resistance, activates immune system, prevents disease
Horse chestnut	<i>Aesculus hippocastanum</i>	Seed	saponins	Cothivet	Skin care (ointment)
Common juniper	<i>Juniperus communis</i>	Fruit	Essential oil up to 2% (mainly monoterpene carbohydrates), up to 40% sugars		Improves metabolism, supports kidneys.
Savin Juniper	<i>Juniperus sabina</i>	Flowering heads	Essential oil (very strong – do not make or gather at home)	Uterale	To counter retention or to help deliver the afterbirth
Laurel	<i>Laurus nobilis</i>	Leaves	Essential oil 2% (containing 50% cineol), bitter substances, flavonoids	Laurel ointment (oil)	Claw treatments and care
Lavender	<i>Lavendula officinalis</i>	Flower	Essential oil 1-3% (containing camphor and cineol a.o.), 12% tannins	Bremsen-Frei Plus (lavender oil), Cothivet (lavender oil), Septobion (lavender oil)	Spray: protection against flies, mosquitoes and horse flies. Reduces stress (f.i. during transport).
Lemon	<i>Citrus limon</i>	Peel	Essential oil, 2,5% (terpene, α -limonene), flavonoids	Melissengeist-Ademspray (oil), Eucanel	Disinfects air, stimulates respiration, stimulates immune system, digestion, liver, lactation

Lemon balm	<i>Melissa officinalis</i>	Leaves	Essential oil, 0,05-0,8% (citral 50%), tannins 4%, flavonoids	Melissengeist-Ademspray (oil), Digestamine	Relieves respiratory problems, improves resistance, improves metabolism in very young animals
Linseed, flax	<i>Linum usitatissimum</i>	Seed and linseed oil	Seed: 25% indigestible carbohydrate, 40% fatty oils (containing a lot of unsaturated fatty acids), 25% proteins	No product available for pigs, but available in pharmacies and drugstores	Laxative (see chapter on sows in farrowing pen)
Liquorice	<i>Glycyrrhiza glabra</i>	Root	2 - 15 % saponins, 0,5 – 2% flavonoids and 10% sugars	Multicon, Voralberger Bronchial-Kräuter	Infections of the intestinal tract or treatment of respiratory problems
Marigold	<i>Calendula officinalis</i>	Flower	triterpene glycosides, flavonoids, luteins (carotenoids)	Klausan tincture, Septobion, Wundbalsem	Claw problems and claw care, skin problems, mild disinfectant for wounds, skin lesions
Milk thistle	<i>Silybum marianum</i>	Seed	Silymarine (mixture of 3 flavonolignans), 25% fatty oil, 30% proteins	Urkraft Ferkel, Immunal, Bronchimax, Multicon	Antioxidant (influences a number of organs), supports liver function (detoxification).
Mint	<i>Mentha piperita</i>	Herb	Essential oil 1-3 % (variable, usually 50% menthol), tannins about 10%, flavonoids	Aeroforte, PP100	Reduces mucous in respiratory tract, can be used to treat air in closed housing systems.
(Stinging) nettle	<i>Urtica dioica</i>	leaves	Folic acid, acetic acid, histamine, choline, silicium (in the nettles) and many vitamins, minerals (mainly iron) and tannins	Voralberger Bronchial-Kräuter	Improves calcium metabolism, improves bone development, protects intestines, supports metabolism (and increases lactation), increases appetite, adds minerals and trace elements, supports respiratory tract, general health.
Nutmeg	<i>Myristica fragrans</i>	Seed, Seed aril (mace)	Essential oil 7 - 15 % (containing 80% pinene en camphene, 6% borneol), 35% fatty oil, 30% starch	Melissengeist-spray (oil)	Respiration, especially in young animals (do not use separately, only in spray)
Oak	<i>Quercus sp.</i>	Bark	Tannins	AA stop powder, Durchfallpulver N, Klausan tincture (with larch resin, camomile and marigold), Rurex, Wundbalsam, Ferm (oak leaves)	Against diarrhoea, improves digestion. External use against claw problems, skin disease, claw care and as a mild disinfectant for wounds.
Oregano, wild marjoram	<i>Origanum vulgare</i>	Herb	Essential oil (especially carvacrol and thymol), tannins	Dosto (oregano oil), Biodugeen (oil), Oregpig (dried leaves and flowers with 500g/kg cold pressed essential oil), P.E.P. 1000, Ropadiar (oil), RepaXol (oil, mixture of oregano, cinnamon, thyme and Spanish pepper)	Improves digestion, mildly antibacterial, prevents (weaning) diarrhoea, improves intestinal health
Plantain species	<i>Plantago species</i>	Herb	Silicic acid, tannins	Urkraft Ferkel	Against diarrhoea, improves intestinal health
Rosemary	<i>Rosmarinus officinalis</i>	Leaves	Essential oil 1 - 2,5% (mainly camphor, borneol, cineol), tannins	Cothivet (oil), Fruba, Multicon	Ointment for skin, claws and joints. Improves metabolism, appetite and digestion.

Sage	<i>Salvia officinalis</i>	Leaves	Essential oil 0,5 - 2,5% (mainly thuyon and cineol), tannins, phyto-oestrogens	No specific products available for pigs	Anti-bacterial, improves intestinal health, may prevent mastitis in sow after weaning.
Sweet chestnut	<i>Castanea sativa</i>	Leaves, bark	Tannins 10%, flavonoids	Chestnut Extract	Stimulates digestion
Tea tree	<i>Melaleuca alternifolia</i>	Leaves	Essential oil	Eucanel	Disinfectant
Thyme	<i>Thymus vulgaris</i>	Leaves	Essential oil 1-4% (thymol about 50%, carvacrol about 10%), flavones, tannins	Bronchimax, Cothivet (oil), Cuxarom, Digestarom, RepaXol (oil, mixture of oregano, cinnamon, thyme and capsicum), Kanters Acid favourite (oil), Wundbalsam (oil)	Respiratory problems, disinfects wounds, cares for skin, improves digestion and intestinal health
Common tormentil	<i>Potentilla erecta</i>	Root	Tannins	CS 82	(Weaning) diarrhoea
Turmeric	<i>Curcuma species</i>	Root	5% curcumin (yellow colour, polyphenols), 10% essential oils	Animon Plus	Liver function, digestion, chronic obstructions of respiratory tract
Valerian	<i>Valeriana officinalis</i>	Root	Essential oil and several plant-specific substances	Sedafit (combined with Passiflora off.)	Relaxing, stress reduction (f.i. before transport)
Walnut	<i>Juglans regia</i>	Leaves	Naphthoquinones, flavonoids, tannins	Immunnall	Activates immune system, prevents diseases. External use against parasites and skin problems
Willow	<i>Salix spp (a number of species are used)</i>	Bark	Salicylates, tannins	No product available for pigs, twigs may be given to chew on	Against pain, fever and infection. Improves general well-being.
Yarrow	<i>Achillea millefolium</i>	Herb	Essential oil 0,2% (up to 40% chamazulene), bitter substances	Herb	Improves digestion, metabolism, circulation
Yeast	<i>Saccharomyces spp</i>	Cells	Used as a probiotic (living organism), source of vitamin B, or as a prebiotic (only cell walls – beta glucanes)	Bio-Moss, Herbavit, Progut, Schweizer Krauter Fit, Sel-Plex, Urkraft Schweinemast, Diamond, Fruba, Fyto-stop, Safmannan, Voralberger Bronchial-Kräuter	Supports resistance, metabolism, skin metabolism, building of vitamin reserves, increases appetite, supports respiratory system, general health, against diarrhoea, improves intestinal flora, improves growth and production.
Yucca	<i>Yucca species</i>	Root	Saponins	Fibermax, Multicon, De-odorase, Yucca-plus	Reduction of ammonia smell in urine and manure, improves utilisation of feed (see chapter on sow in farrowing pen)

