



nutrex^{nv}

the finishing touch for nutrition



BroClear®
Clear way to
breathe naturally

NEXT GENERATION PHYTOGENICS

Respiratory discomfort

Functions of the avian respiratory tract

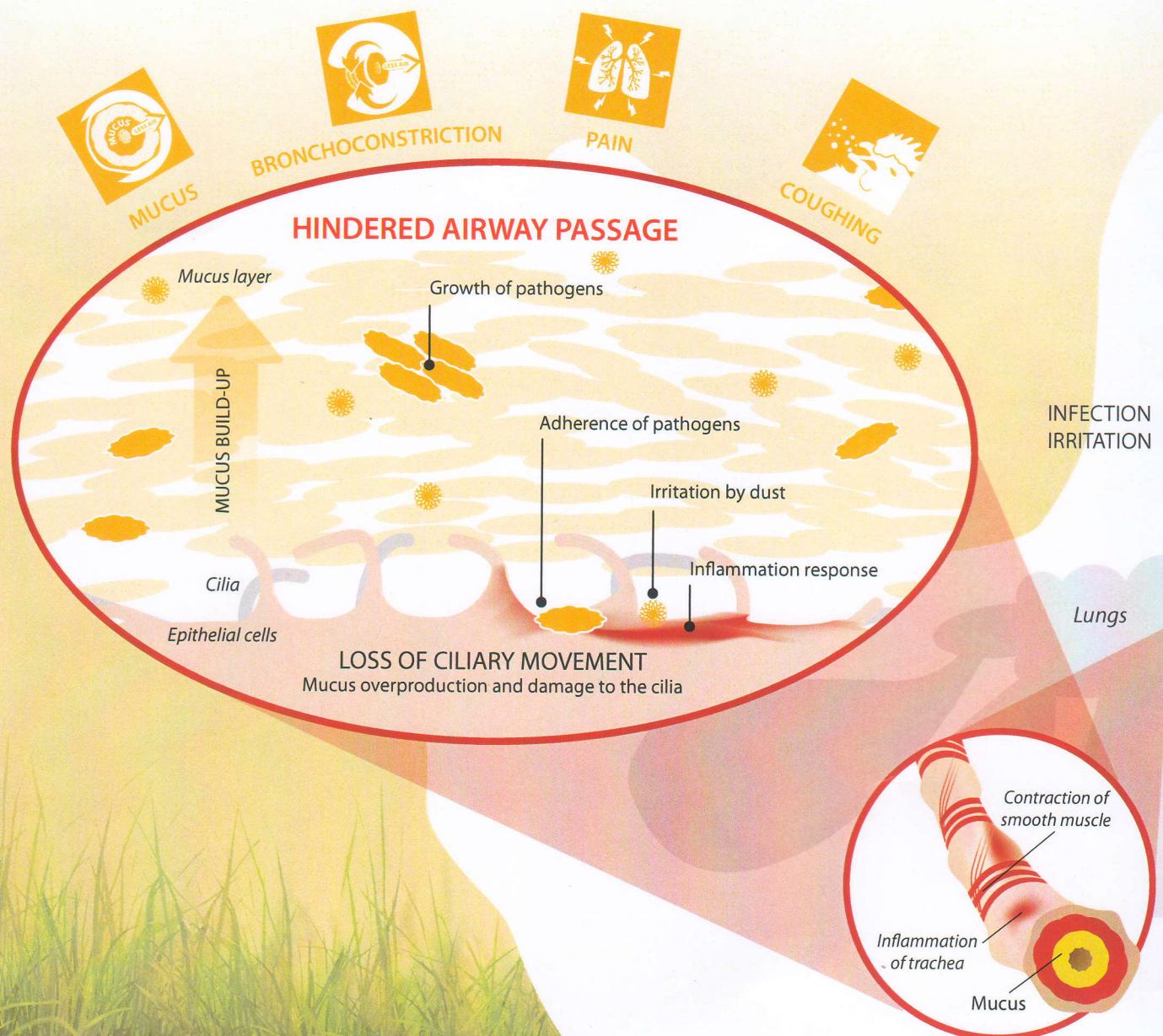
The avian respiratory system is playing a key role in a variety of physiological processes, such as the aerobic energy metabolism, thermoregulation, the electrolyte balance and vocal communication. Optimizing the oxygen supply will therefore stimulate the general well-being, muscle growth, egg production and the immune system of the animal.

Development of symptoms

Long-term exposure to dust, ammonia and microorganisms may irritate the respiratory tract of animals. Combined with other environmental stressors, such as heat stress, high humidity and bad ventilation, this can result in tissue damage, an infection and/or an excessive inflammatory response.

More specifically, chronic inflammation of the respiratory tract is accompanied by **MUCUS** overproduction and uncontrolled, spasmolytic action of smooth muscles of the airways, called **BRONCHOCONSTRICION**. These will both result in the narrowing of small airways and thus **HINDERED AIRWAY PASSAGE**. The muscle contractions in airway bronchi and bronchioles will stimulate uncontrolled **COUGHING** and sneezing, leading to more lesions and tissue damage. **PAIN** caused by lesions, will deplete essential nutrients.

Finally, the reduced oxygen uptake and feed intake lowers the energy production, explaining the birds behavior, e.g. fatigue and restlessness. This further reduces feed intake, and eventually results in a vicious circle.



Mode of action of BroClear

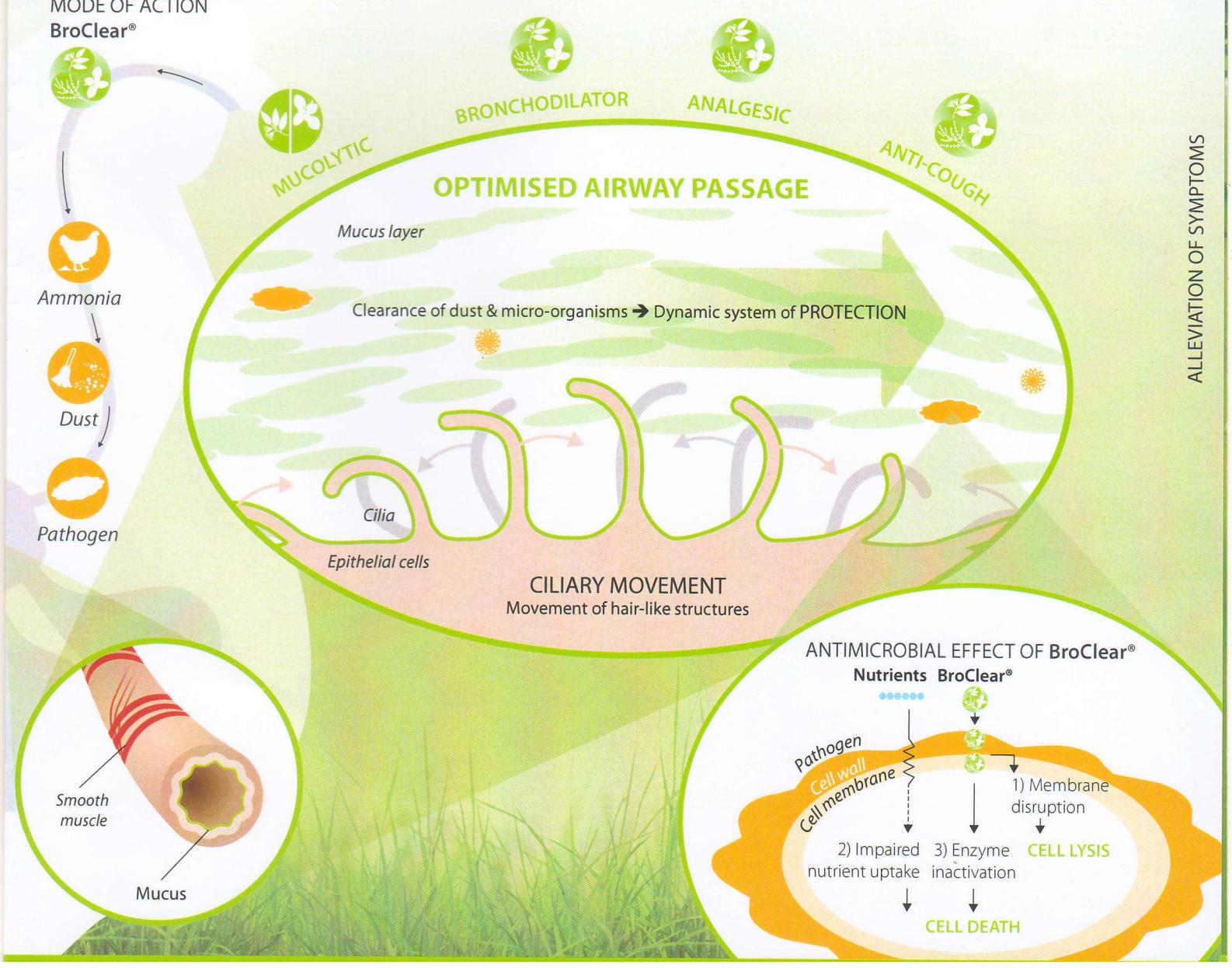
Essential oils and plant extracts are in use for a very long time already in human medicine and have become a very popular alternative in the relief of various clinical symptoms. Certain bioactive compounds from plants are well known for their antimicrobial, antioxidant, immunomodulating, mucolytic, bronchodilatory and/or anti-cough action. Using a plant-derived product that reinforces natural breathing will automatically result in higher oxygen uptake, higher feed intake and improved performance.

Antimicrobial effect

The well-established antimicrobial action of specific components of **BroClear** on respiratory tract pathogens can reduce the consequences of bacterial and viral presence in the mucus layer. The antimicrobial action is based on a combination of direct effects, such as perturbation of the membrane, enzymatic inhibition, impaired nutrient transport, and indirect effects, such as stimulation of the immune system, which increase the antimicrobial resistance of the bird.

MODE OF ACTION

BroClear®



Optimised airway passage

By combining different natural bioactive compounds, **BroClear** is able to stimulate ciliary movement and integrity, and controls mucus production to maintain the protective barrier function of the mucosal membrane. The **MUCOLYTIC** and **BRONCHODILATOR** effect of specific natural substances is helping to reduce breathing difficulties and associated symptoms e.g. coughing and sneezing. Moreover, the strong **ANTI-COUGH** effect of thyme and **ANALGESIC** action of eucalyptus helps to improve the well-being of the animal.

Efficient vaccination

Immunomodulating properties of some phytogenic substances in **BroClear** will help to reduce the negative effects during live vaccination, increasing vaccination efficacy and covering future problems.

Trial results BroClear

BroClear was tested in an infection trial in which broilers were challenged with a severe respiratory E. coli O78 pathogen at day 23, and developed symptoms at day 26. **BroClear** was dosed at 500 mL/1000L drinking water for 5 consecutive days, 24h, and supplementation started at d23 (BC 1) or d26 (BC 2).

BroClear enhanced broiler performance, reduced mortality and improved the immune response significantly ($p<0.05$) compared to the challenge group (CHA) (see fig 1, 2 and 3).

LEGEND:

- CON = Control group
- CHA = Challenge group
- BC 1 = **BroClear** group 1 (day 23 - 27)
- BC 2 = **BroClear** group 2 (day 26 - 30)

Benefits of BroClear

TABLE 1: BENEFITS OF USING BROCLEAR

 GENERAL HEALTH	<ul style="list-style-type: none"> • Increased feed intake • Improved oxygen uptake • Increased water consumption • Reduced use of antibiotics • Reduced mortality
	 PERFORMANCE <ul style="list-style-type: none"> • Enhanced egg production • Reduced weight loss
	 <ul style="list-style-type: none"> • Improved body weight gain • Improved feed conversion

FIGURE 1: EFFECT ON PERFORMANCE

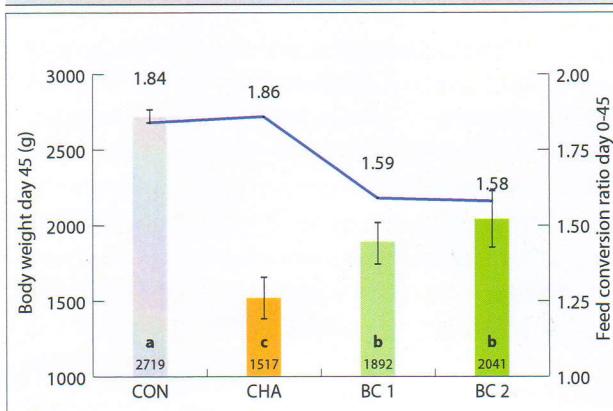


FIGURE 2: EFFECT ON MORTALITY

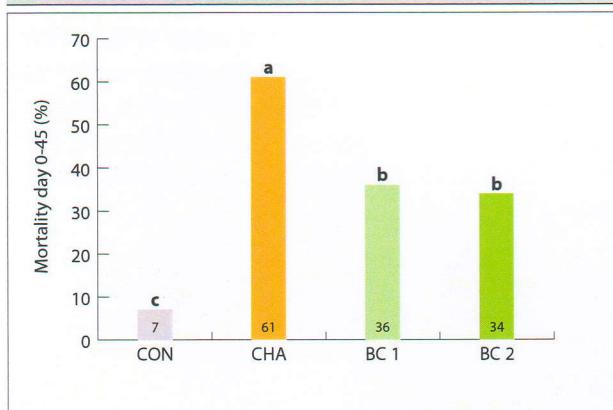
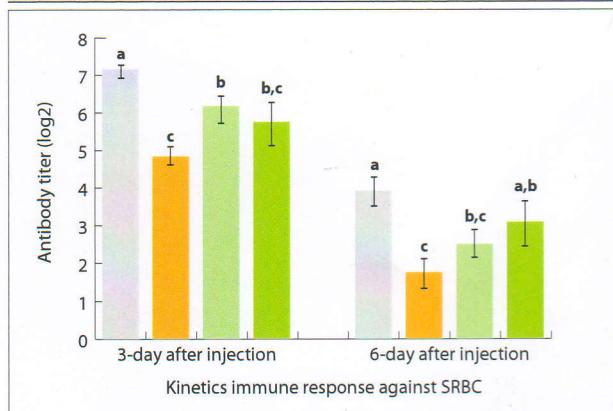


FIGURE 3: EFFECT ON THE IMMUNE RESPONSE



Use of BroClear

TABLE 2: BROCLEAR DOSAGE LEVEL

	 
To prevent problems	300 mL/1000L drinking water, 3-4 days/week
To combat problems	500 mL/1000L drinking water, 4-5 consecutive days
<i>Do not use simultaneously with drinking water vaccination</i>	

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