Hepadyn biodevas

The draining and detox solution

Objectives

Mode of action

User Guide

Field Results

Objectives

Biodevas laboratoires

➔ Restore hepatic functions

➔ Improve feed consumption

➔ Stimulate global immune system

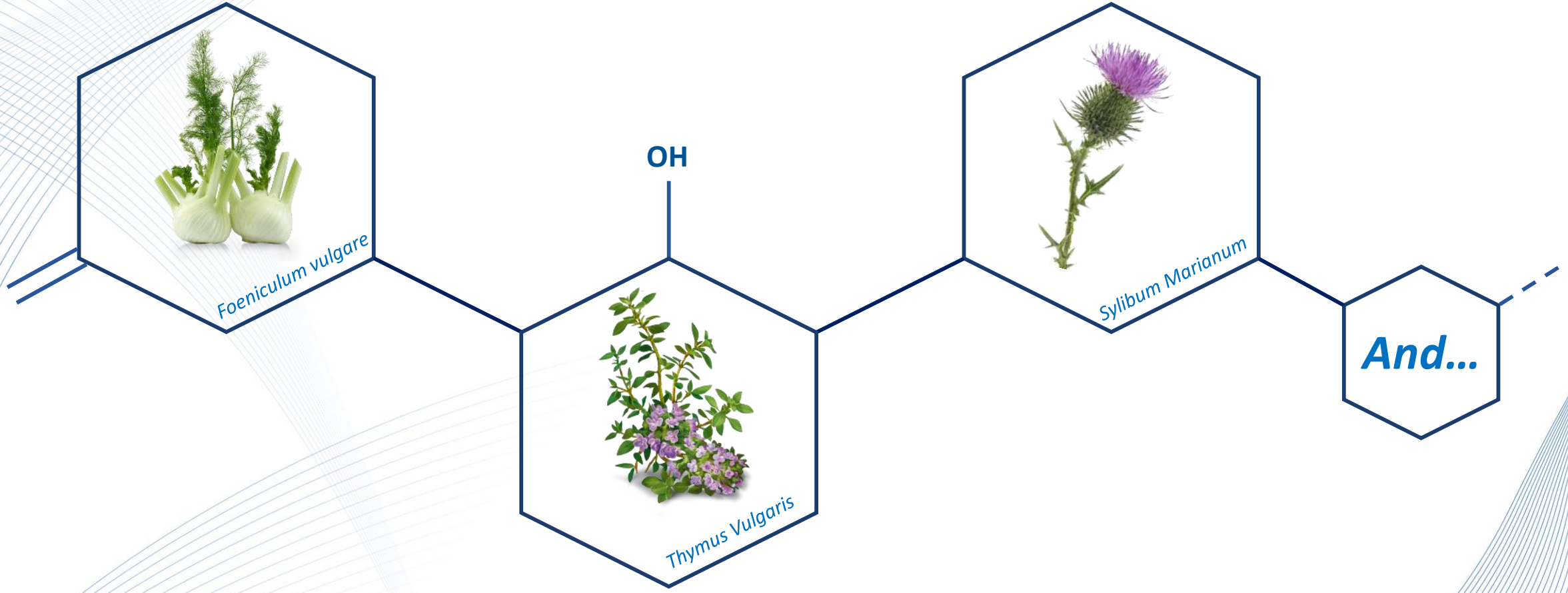
Indications

(from field observations)

➔ LAYING HENS

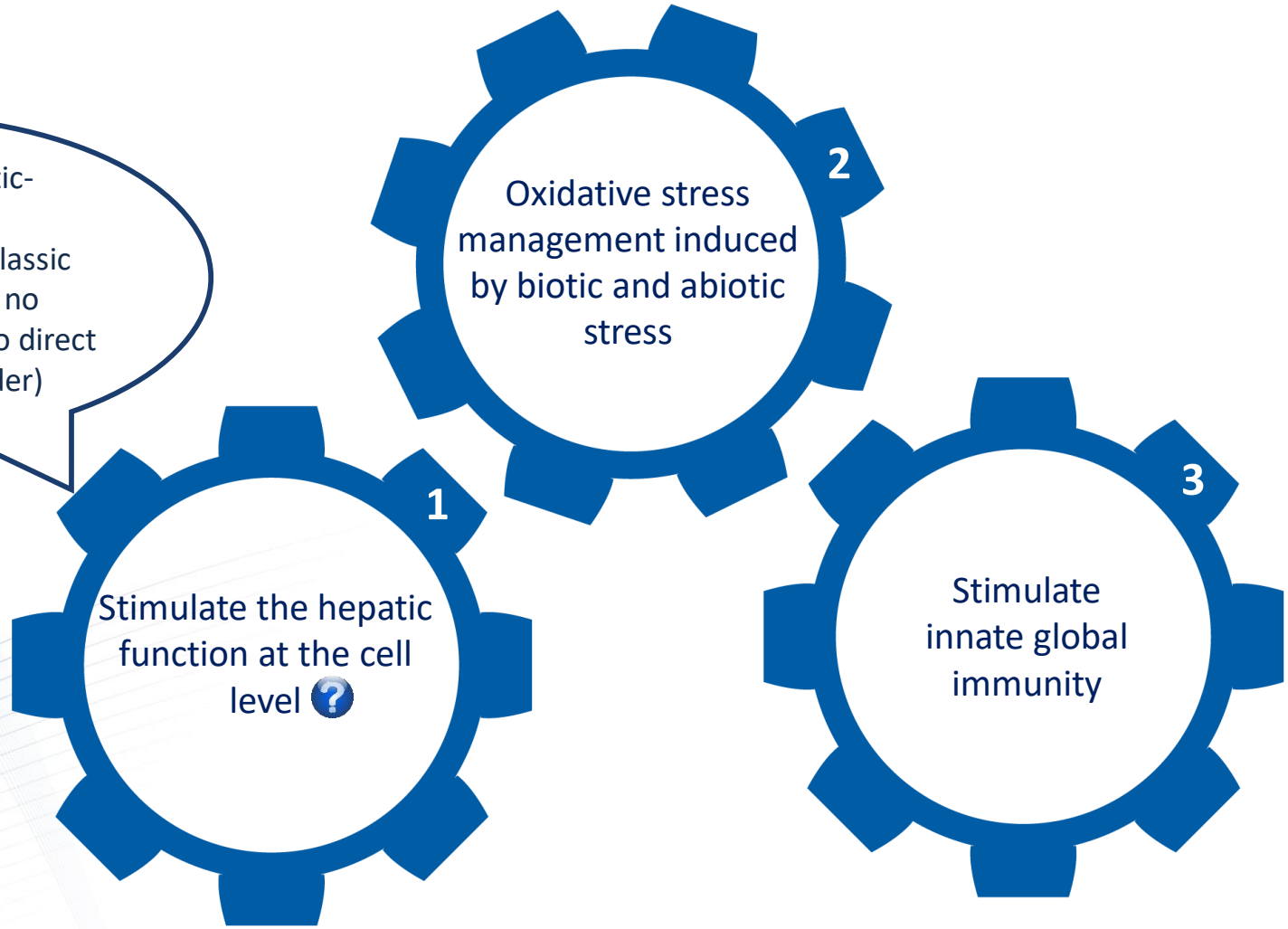
- ✓ Provide a better feed uptake
- ✓ Make hens less nervous or prone to peaking
- ✓ Restart feed consumption quicker after viral or stressful periods
- ✓ Without any laxative effect

Phytogenic Extracts



A synergy of 3 actions

It is a “true” Hepatic-protector
(does not work as a classic “hepatic product”: no sorbitol, nor choline: no direct action on gall-bladder)



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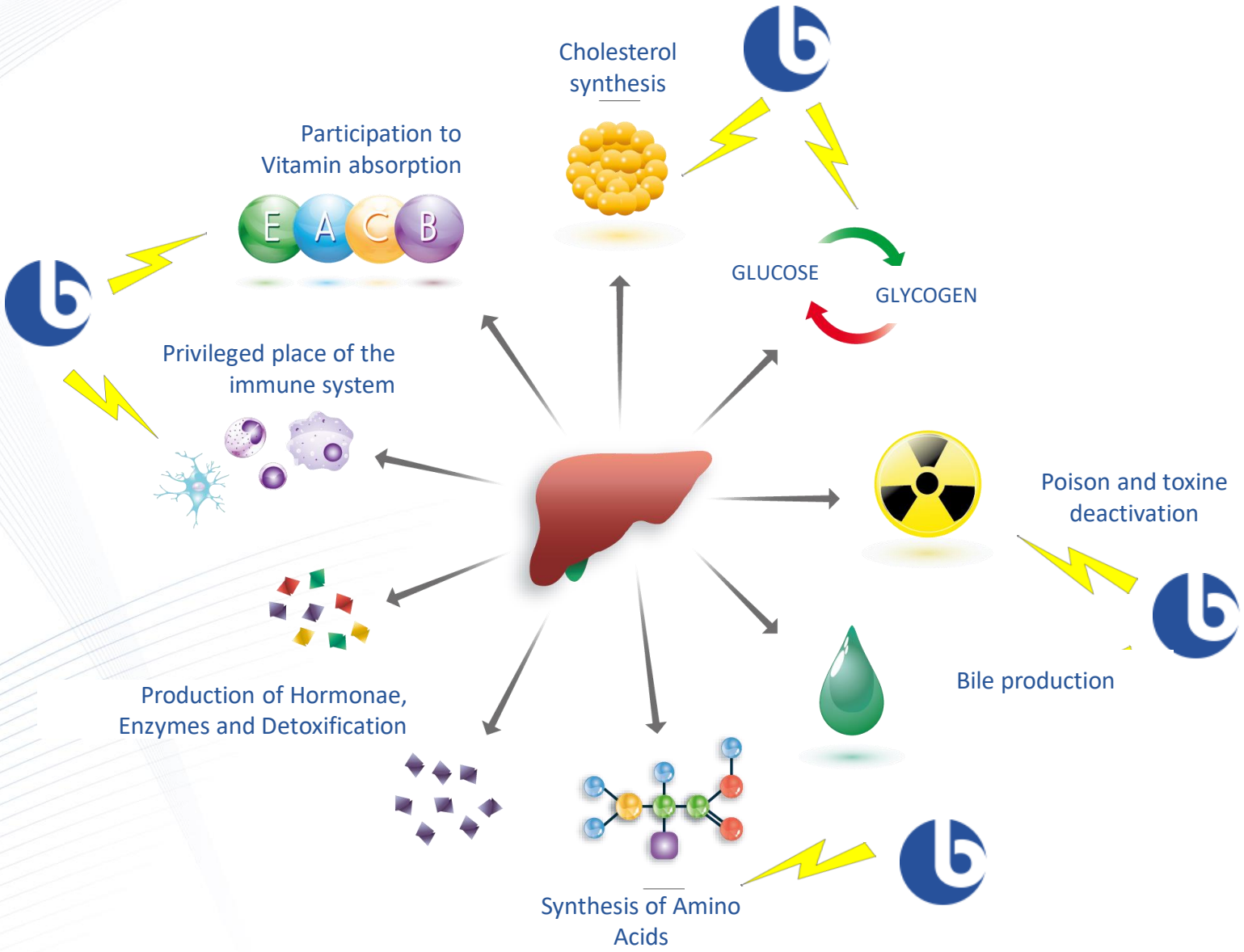
Mechanism of action

Liver functions

biodevas laboratoires



Mechanism of action

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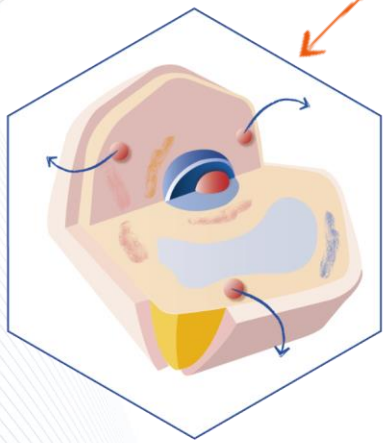
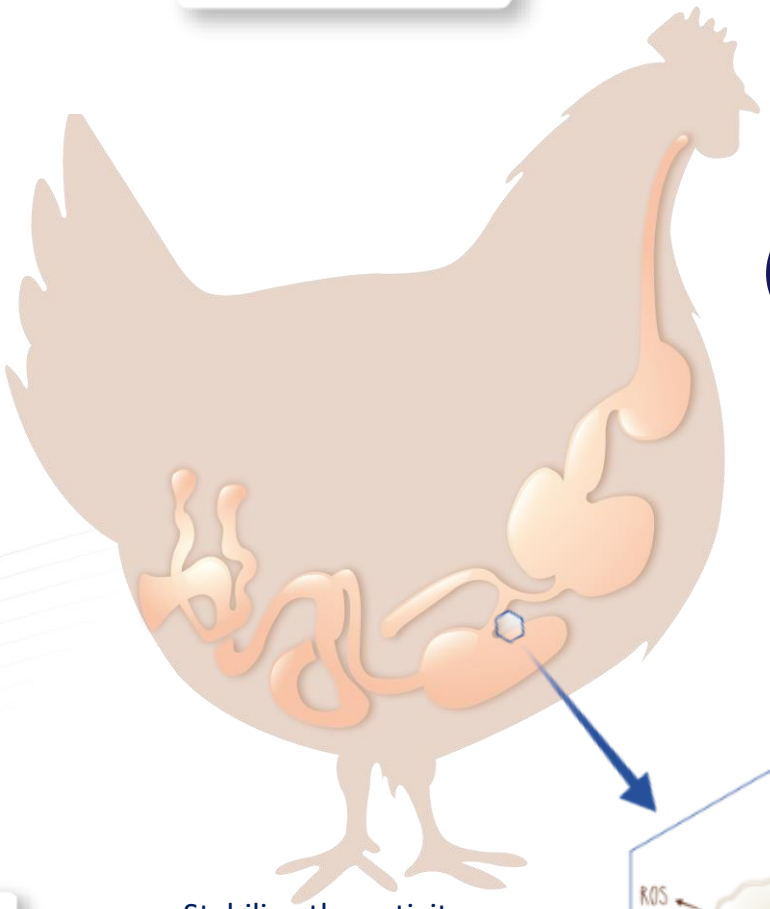


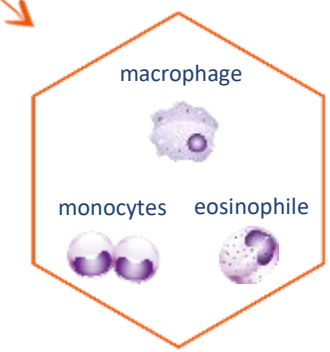
Stimulate the elimination of toxins

1

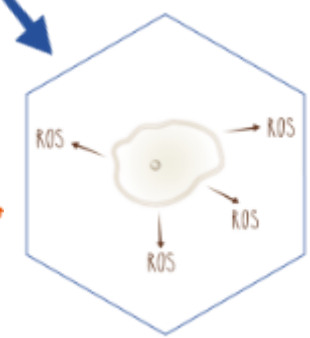


3

Stimulate the production of Interleukines, cytokines



Hepadyn biodevas → Stabilise the activity : SOD (Super Oxyde Dismutase) GPX (Glutathion Peroxydase)



2

User Guide

- **Breeding Pullets**
  - ✓ **Animals less than 30 days old:**
    - 0,5 ml/L for 3 to 4 days
  - ✓ **Animals more than 30 days old:**
    - 1 ml/L for 3 to 4 days
- **Laying hens**
  - ✓ **From the arrival of the animals :**
    - 1 ml/L for 3 to 4 days
  - ✓ **Repeat every month and before any critical period in the farm** (vaccinal stress, feed transition, heat strokes management, viral passage…)

Benefits

biodevas laboratoires

➔ **HEALTH BENEFITS :**

- ✓ Increase global activity
- ✓ Do not cause diarrhea (no choline nor sorbitol)
- ✓ Can be used in case of heat strokes

➔ **LAYING HENS :**

- ✓ Help to homogenise lots (pullets)

Field Results

All our trials are done directly in real farming conditions with partners specifically chosen for their professionalism and consciousness. All trials are done under the supervision of our experts.

Hepadyn biodevas

Field results

TRIAL OBJECTIVES	Highlight histologically the efficacy of Hepadyn/Drainix on 27 poultry liver samples.
STUDY PROVIDER	Study carried out upon request of Biodevas by Oniris, national veterinary school from Nantes.

Farmers:

Implementation of HEPADYN in 2 laying hen farms

Implementation of DRAINIX in 1 Broiler farm

Implementation of DRAINIX in 1 Turkey farm

Protocol:

LAYING HENS :

- 3 livers were taken as samples on the lots before supplementation,
- Supplementation with Hepadyn into drinking water at the dose of 1 ml/liter for 3 days
- 3 livers were taken as samples on the same lots, 10 days after supplementation.

BROILERS / TURKEYS :

- 3 livers were taken as samples on the lots before supplementation,
- Supplementation with Drainix into drinking water at the dose of 1 ml/liter for 2 days
- 3 livers were taken as samples on the same lots, 10 days after supplementation

Analytical Method

Provider	**ONIRIS -** PASAP (ANALYSIS AND SERVICE PROVIDER IN PATHOLOGICAL ANATOMY)
Samples	Livers on living animals provided by Biodevas laboratoire
Technics	Histological sections after being formalin-fixed and paraffin-embedded, then microtomy and HES coloration (Haemalun – Eosin – Sulfate)
Required test	Comparison of histological sections before and after supplementation, according to the following criteriae : **- lesions on hepatocytes** **- lesions in the portal area** **- lesions on blood capillaries and Kupfer cells**
Pictures	Magnified x200

Tableau I- Identification des animaux, des prélèvements, dates de validation des lames HES

Lot	Espèces	1er prélèvement avant Hépadyn Date et âge	Numéros PASAP	2e prélèvement après Hépadyn Date et âge	Numéros PASAP
Domaine des Genêts P1 (41 Pierrefitte sur Sauldre	Poules pondeuses conventionnelles	Pas de prélèvement	Pas de prélèvement enregistré	2 avril 2016 58 semaines	2016-1685
Domaine des Genêts P2 (41 Pierrefitte sur Sauldre)	Poules pondeuses conventionnelles	5 avril 2016 62 semaines	2016-1678 (2 prélèvements) 2016-1724 (2 prélèvements)	14 juin 2016 73 semaines	2016-3091 (2 prélèvements) 2016-3133 (1 prélèvement)
Suard (41 Arville)	Poules Pondeuses plein-air	22 avril 2016 57 semaines	2016-2114 (2 prélèvements) 2016-2120 (2 prélèvements)	13 mai 2016 60 semaines	2016-2474 (2 prélèvements) 2016-2478 (1 prélèvement)
Elevage Houdouin Pierrick	Poulets	2 juin 2016 14 jours (avant Drainix)	2016-3147 (3 prélèvements)	15 juin 2016 28 jours (après drainix)	2016-3124 (trois prélèvements) 2016-3125 (trois prélèvements)
Elevage Houdouin Pierrick	Dindes	10 Avril 2016 (avant Drainix)	pas de prélèvement enregistré	6 juillet 2016123 jours (après drainix)	2016-3463 (deux prélèvements)

Table 1 : Identification of animals and sample schedule

Samples schedule and identification					
Lot	**Species**	**1st sample before Hepadyn**	**Sample identification number**	**2nd sample after Hepadyn**	**Sample identification number**
Farm Genêt (Building 1)	Conventional laying hens	No sample	-	04-02-2016 (58 weeks old)	2016-1685
Farm Genêt (Building 2)	Conventional laying hens	04-05-2016 (62 weeks old)	2016-1678 (2 samples) 2016-1724 (2 samples)	06-14-2016 (73 weeks old)	2016-3091 (2 samples) 2016-3133 (2
Farm Suard	Free range laying hens	04-22-2016 (57 weeks old)	2016-2114 (2 samples) 2016-2120 (2 samples)	05-13-2016 (60 weeks old)	2016-2474 (2 samples) 2016-2478 (1 sample)
Farm Houdouin (1)	Conventional broilers	06-02-2016 (14 days old)	2016-3147 (3 samples)	06-15-2016 (28 days old)	2016-3124 (3 samples) 2016-3125 (3
Farm Houdouin (2)	Conventional turkeys	No sample	-	07-06-2016 (23 days after Hepadyn)	2016-3463 (2 samples)

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Field results

Farm Genêts : laying hens

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Lot			Control lot (before treatment)	Lot after treatment
			Genêts Farm P2: Animals 2016-1678	Genêts Farm P2: Animals 2016-3091
Hepatocytes	Size		Normal	Normal
	Size homogeneity		Homogeneous	Homogeneous
	Nuclear		Regular	Regular
	Cytoplasm	Glycogen overload	0	0
		Lipid overload: intensity	2 to 3	1
		Lipid overload: type	Polymorph	microvacuolary
		Distribution of lesions	Panacinar	Panacinar
	Degeneration/Necrosis		0	0
Portal areas	Bile ducts	Hyperplasia of oval cells	0	0
		Hyperplasia of bile ducts	0	0
		Other lesions	0	0
	Inflammation periportal polymorph		2	0
	Hyperplasia of the residual lymphoid tissue		1 to 2	1
	Blood vessels	Congestion	2 to 3	1
		Leukostasis	0	0
Blood capillaries	Congestion		2 to 3	1
	Leucostasis		0	0
Kuppfer cells	Hyperplasia		0	0
	Overload		0	0
Other lesions			Moderated multifocal and fibrinoid hepatopathy on one sample	Moderated multifocal and fibrinoid hepatopathy on both samples : new moderated multifocal micro-hemorrhages on one sample

Hepadyn biodevas

Field results

Genêts Farm : laying hens

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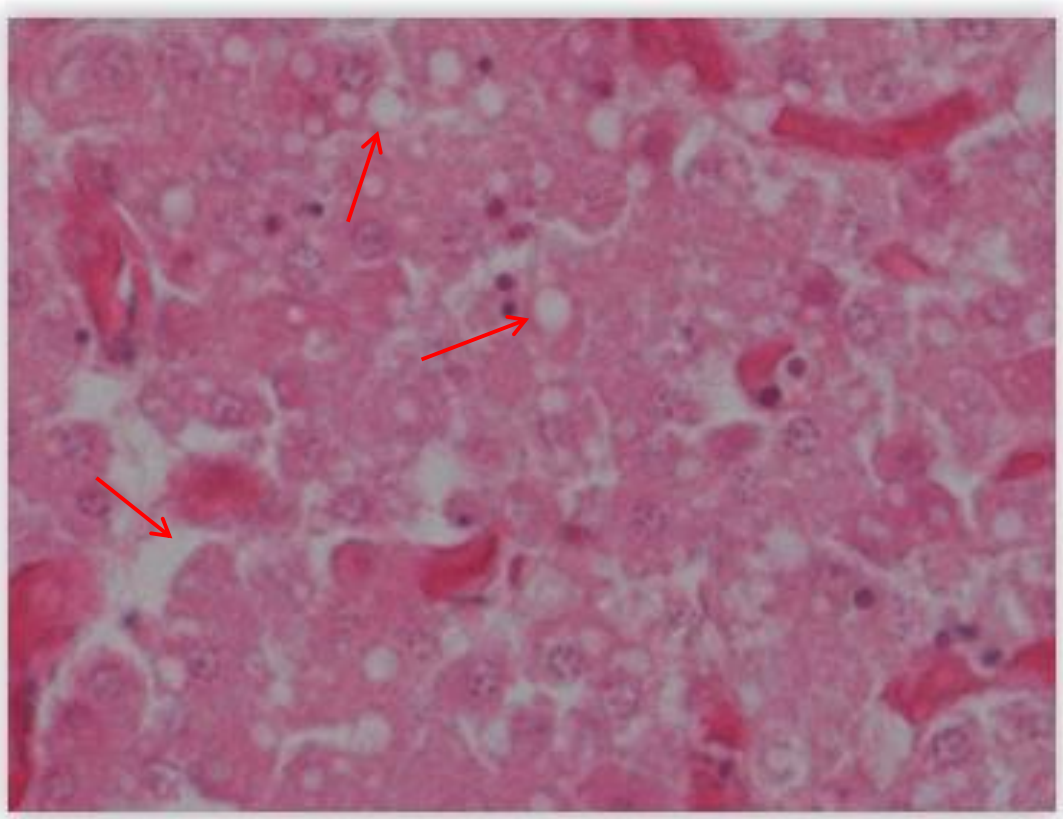
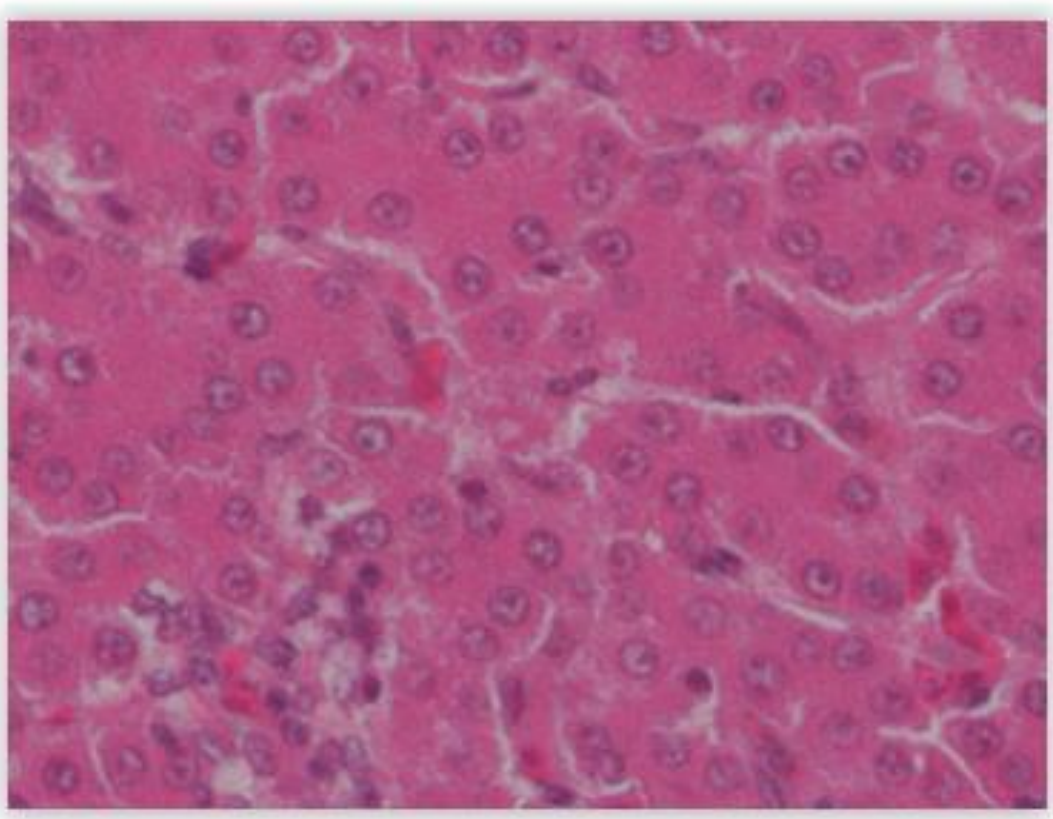
before



LH week 62

after



LH week 73

Lower hepatocyte vacuolization (lipid overload) after supplementation

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Field results

Farm Suard : laying hens

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Lot			Control lot (before treatment)	Lot after treatment
			Suard: Animaux 2016-2120	Suard:Animaux 2016-2478
Hepatocytes	Size		Normal	Normal
	Size homogeneity		Homogeneous	Homogeneous
	Nuclear		Regular	Regular
	Cytoplasm	Glycogen overload	2	1
		Lipid overload: intensity	0	0
		Lipid overload: type	0	0
		Distribution of lesions	0	0
	Degeneration/Necrosis		0	0
Portal areas	Bile ducts	Hyperplasia of oval cells	0	0
		Hyperplasia of bile ducts	0	0
		Other lesions	0	0
	Inflammation periportal polymorph		0	0
	Hyperplasia of the residual lymphoid tissue		0	1
	Blood vessels	Congestion	2 to 3	1
		Leukostasis	0	0
Blood capillaries	Congestion		2 to 3	1
	Leucostasis		0	0
Kuppfer cells	Hyperplasia		0	0
	Overload		0	0
Other lesions			Moderated multifocal and fibrinoid hepatopathy on one sample and new light to moderated multifocal micro-hemorrhages on the same sample	New and light multifocal micro-hemorrhages

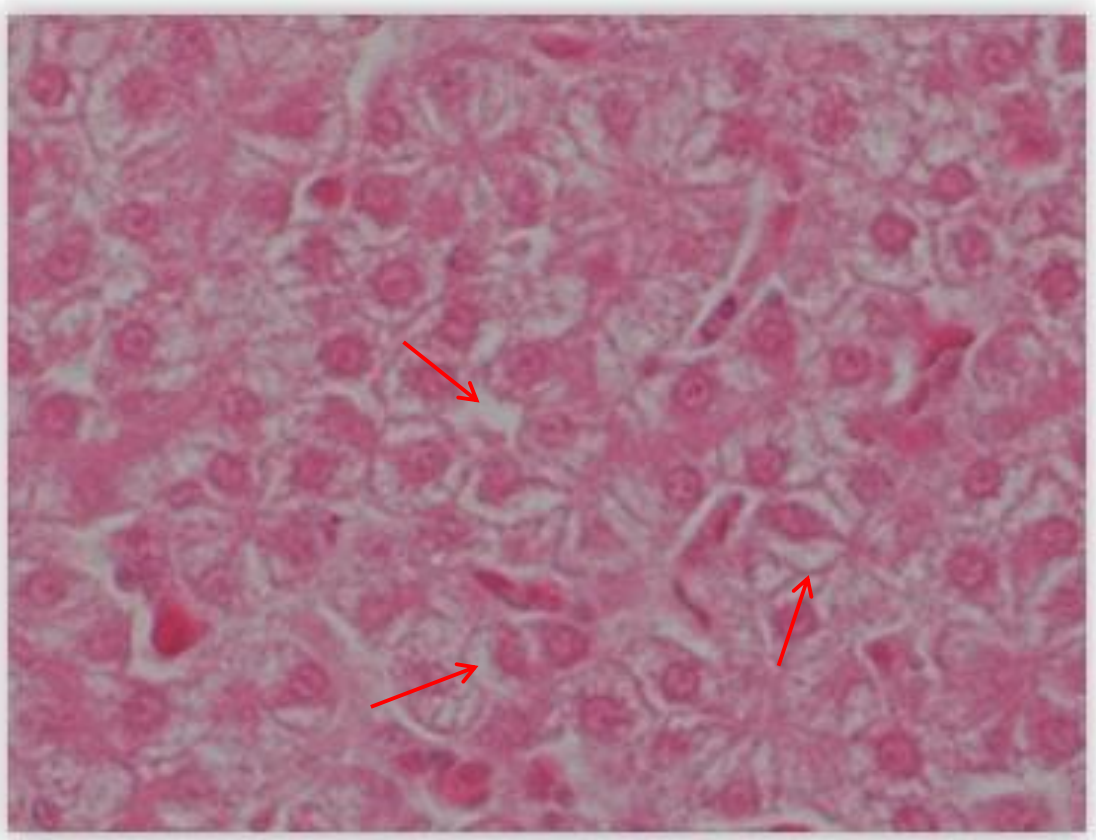
Hepadyn biodevas

Field results

Farm Suard : laying hens

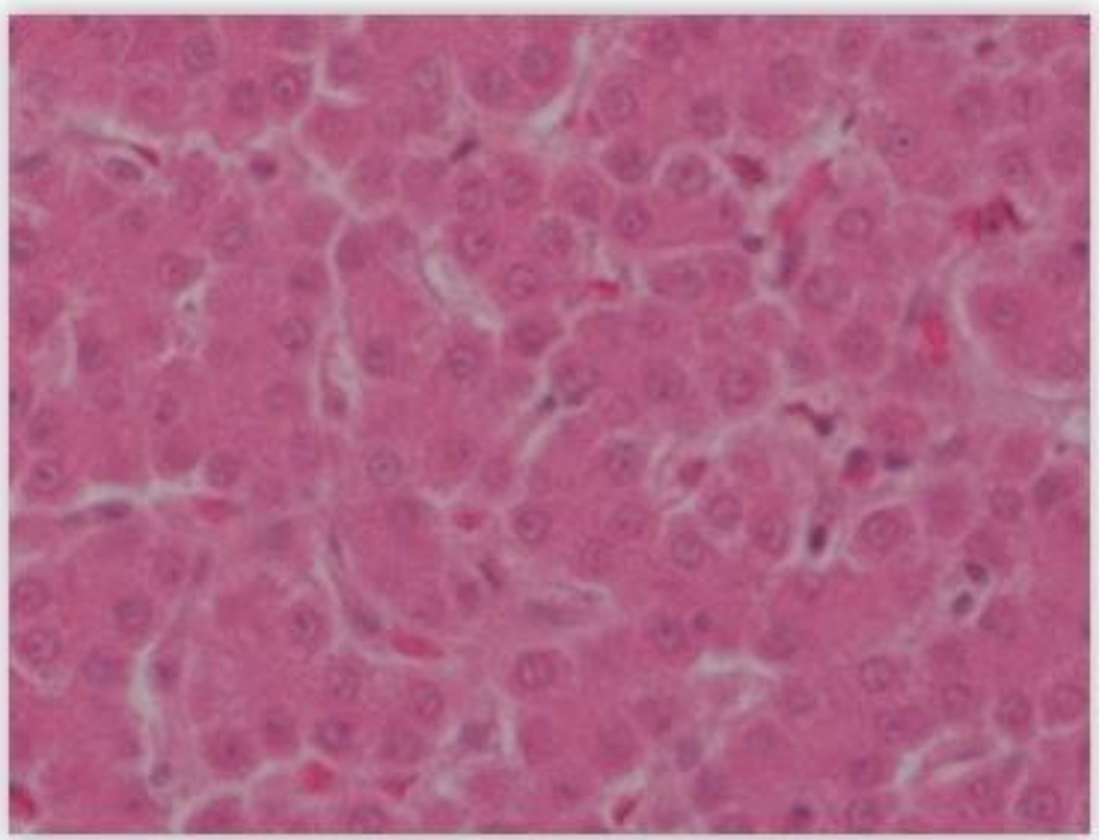
Oniris École Nationale Vétérinaire, Agroalimentaire et de l'Alimentation Nantes Atlantique ~ biodevas laboratoires

before



LH week 57

after



LH week 60

Lower hepatocyte vacuolization (lipid overload) after supplementation

Hepadyn biodevas

Field results

Farm Houdouin : broilers

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Lot			Control lot (before treatment)	Lot after treatment
			Houdouin broilers: Animals 2016-3147	Houdouin broilers: Animals 2016-3125
Hepatocytes	Size		Normal	Normal
	Size homogeneity		Homogeneous	Homogeneous
	Nuclear		Regular	Regular
	Cytoplasm	Glycogen overload	3	3
		Lipid overload: intensity	0	1
		Lipid overload: type	0	microvacuolary
		Distribution of lesions	0	Panacinar
	Degeneration/Necrosis		0	0
Portal areas	Bile ducts	Hyperplasia of oval cells	0	0
		Hyperplasia of bile ducts	0	0
		Other lesions	0	0
	Inflammation periportal polymorph		0	0
	Hyperplasia of the residual lymphoid tissue		1 on one animal, 0 on the others	1 to 2
	Blood vessels	Congestion	1 to 2	1 to 2
		Leukostasis	0	0
Blood capillaries	Congestion		1 to 2	1 to 2
	Leucostasis		0	0
Kuppfer cells	Hyperplasia		0	0
	Overload		0	0
Other lesions			new light to moderated multifocal micro-hemorrhages on one sample Low extramedullary hematopoiesis on one sample	0

Hepadyn biodevas

Field results

Farm Houdouin : broilers

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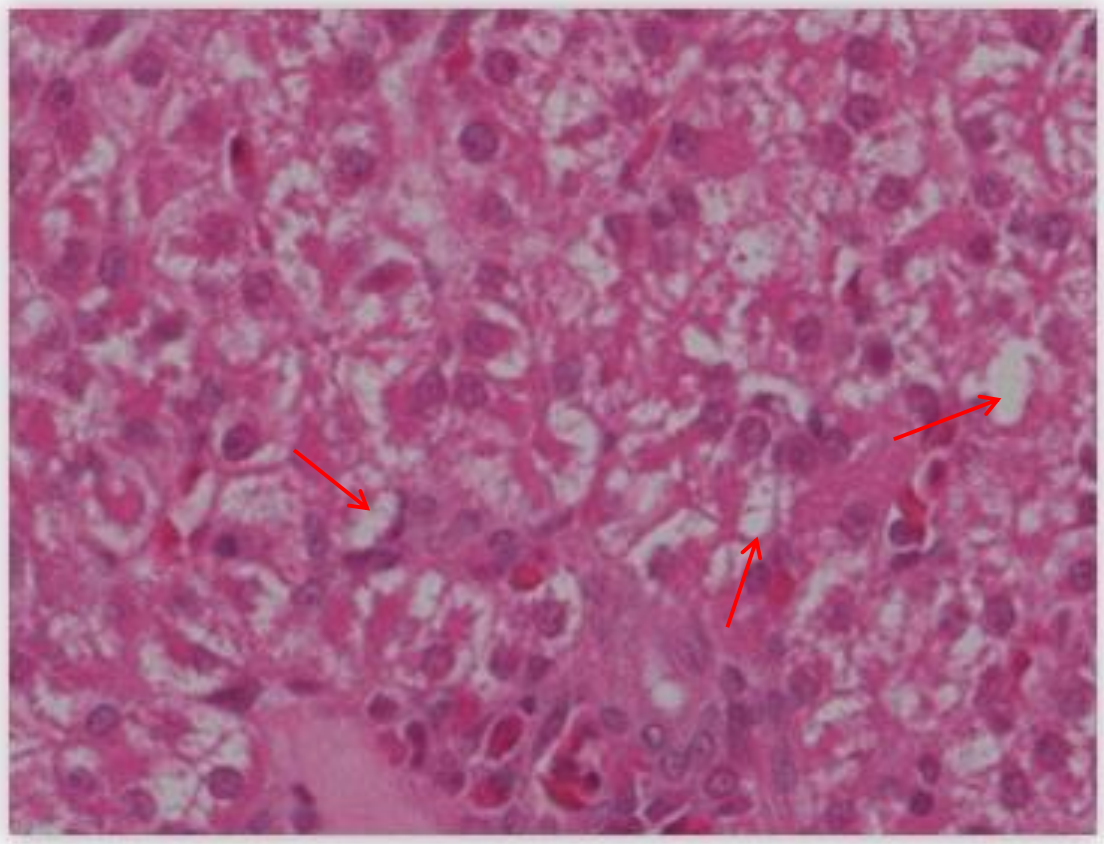
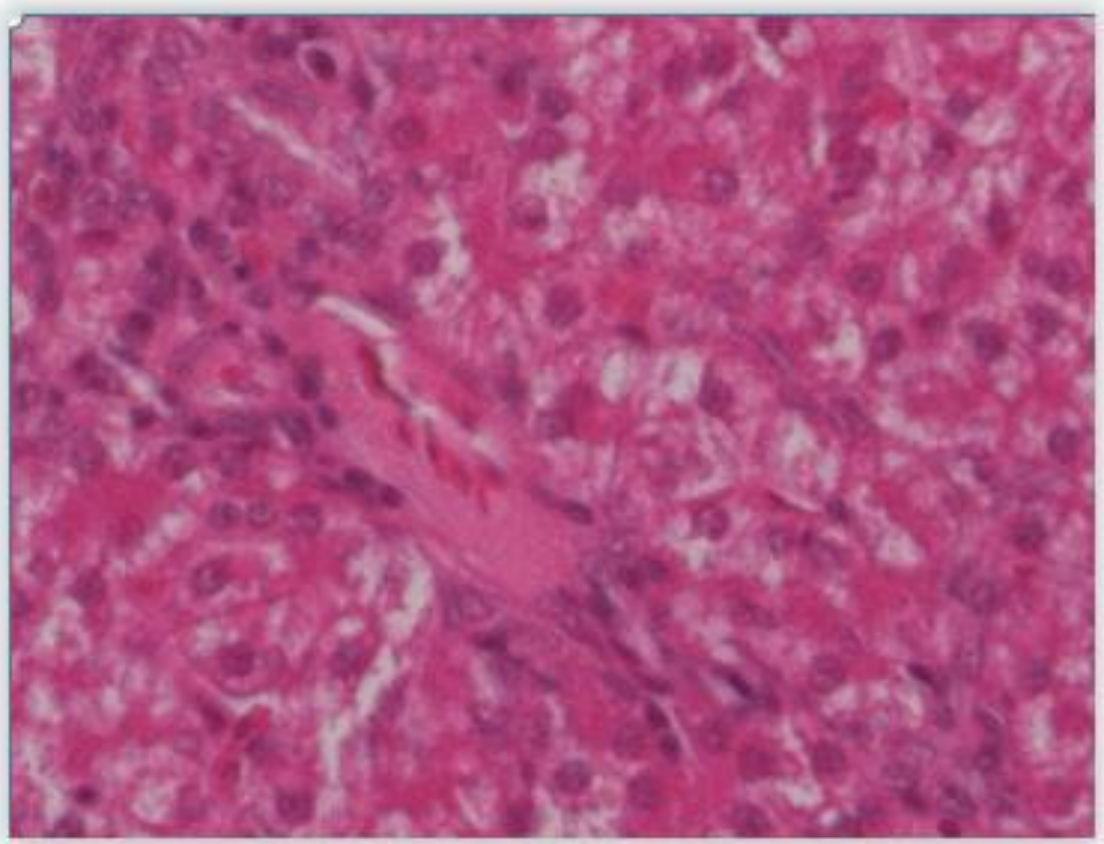
before



BROILERS 14th days old

after



BROILERS 28th days old

Lower lipid overload after supplementation

Results :

Histologically visible decrease of lipid overload on laying hens

Reduction of glycogen overload on broilers, still visible at the end of the lot

⇒Improve proper functioning of the liver and feed uptake