100% dedicated to honey bee health

Api-Bioxal is distributed by Véto-pharma, a French pharmaceutical company 100% dedicated to honey bee health. All Véto-pharma products are developed and manufactured in compliance to the highest quality standards in pharmaceutical manufacturing. As a result, beekeepers around the globe can be confident that each of our products are consistent and designed for bees and humans.

Véto-pharma is dedicated to developing products that benefit bees and beekeepers. Our passion for bees and the benefits they bring to our world is reflected in our good relationships with beekeepers and beekeepers' organizations all around the globe.

Resources:

1. Rademacher E. & Harz M. (2006). Oxalic acid for the control of varroosis in honey bee colonies – a review. Apidologie. 37: 98-120.
2. Nanetti A. et al. (2003). Oxalic acid treatments for varroa control (review). Apiacta. 38.
3. Toomemaa K. et al. (2010. The effect of different concentrations of oxalic acid in aqueous and sucrose solution on Varroa mites and honey bees. Apidologie, SpringerVerlag, 2010, 41 (6): 643-653.
4. Maggi et al. (2017). The susceptibility of Varroa destructor against oxalic acid: a study case. Bulletin of Insectology. 70 (1): 39-44.

A question about Api-Bioxal ?

Phil Craft Véto-pharma's U.S. Technical Advisor, can answer your questions.
Contact him at **phil.craft@vetopharma.com**

The ideal pest management program:

Check the infestation of your colonies at least 3 times a year. → varroa easyCheck By Véto-pharma

Ideal for summer/ fall treatment: no temperature constraints, high efficacy. Can be used in spring as well. → Apivar By Véto-pharma

Natural alternative to treat your hives in spring and/or summer/fall with Thymol. → ApiLifeVar

In fall/winter, keep your varroa levels as low as possible. Or use early in the year for your swarms. → Api-Bioxal

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Committed to apiculture

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Api-Bioxal

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The OXALIC ACID specifically made for HONEY BEES

FOR SOLUTION, SUBLIMATION OR SPRAYING

E.P.A. APPROVED FOR HONEY BEES

5-YEAR SHELF LIFE

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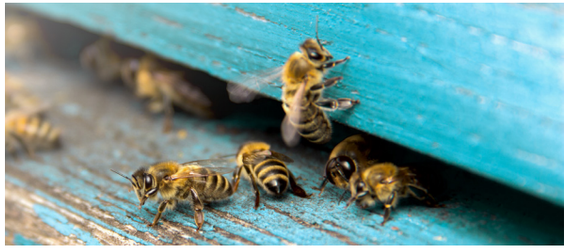
API-BIOXAL IS APPROVED BY THE E.P.A. IN THE U.S.A.
SPECIFICALLY FOR USE IN HONEY BEE COLONIES



Api-Bioxal, your registered solution for oxalic acid treatment.

Api-bioxal is an oxalic-based Varroa knock-down treatment developed specifically for honey bees, officially registered by the USDA and approved by the E.P.A.

This means that the formulation has been strictly controlled to guarantee the safety:

- Of the beekeeper that will handle the oxalic acid.
- Of the honey bee colonies themselves.
- And of course of the safety of the consumers of hive products from treated colonies.

Treating against Varroa is necessary to keep honey bee colonies healthy and strong. But, making sure that treatments will not harm consumers of the hive products or the environment is just as important.

> "We wanted to give the American beekeepers a legal solution to treat their colonies with oxalic acid.

Freddy Proni, North America Area Manager

Oxalic acid: An organic option for brood-free colonies

The high efficacy of oxalic acid against Varroa destructor in brood-free honey bee colonies (*Apis mellifera*) has been demonstrated repeatedly in extensive research over the past decades.[1-2] The emphasis is on "brood-free", because oxalic acid targets phoretic mites, but does not work against Varroa inside the capped brood.[1] Repeated treatments with oxalic acid on the same generation of worker bees and in the presence of brood are not recommended due to potential detrimental effects on bees and/or brood.[1-3] Thus, optimal efficacy of one-time oxalic acid treatments can only be achieved in brood-free or nearly brood-free condition of the colonies.

While the mode of action of oxalic acid as a miticide is not clearly understood, it seems that the low pH of oxalic acid solutions has a deleterious effect on the mites when they get in contact with it.[4]

What makes oxalic acid interesting as a treatment against varroa mites - apart from its **high efficacy of more than 90%**[1] - is its classification as an organic treatment by EU regulations (EU Council Regulation, No. 1804/1999).[4] This makes oxalic acid **especially attractive for natural beekeepers, but also for conventional operations practicing IPM** (Integrated Pest Management) with rotating treatment schedules.

EASY TO USE POWDER
FOR SUBLIMATION, DRIBBLE OR SPRAY

Api-Bioxal brings a quick and economic solution with only one application.

When to use Api-Bioxal?

We recommend using Api-Bioxal in late fall or winter, when there is little to no brood (ideally few weeks after the first frost).

If you wish to use Api-Bioxal in Spring or Summer:
- Do not treat during honey flows
- Be aware that brood presence will impear the final efficacy: ideally, halt egg laying by the queen for 25 days prior to treatment (i.e., queen caging).

Api-Bioxal

Package Size	Dribble (nb of colonies)	Sublimation (nb of colonies)
35g	20	35
175g	100	175
350g	200	350

5-year shelf life

How to use Api-bioxal?

DRIBBLE:
Dribble 5ml of the solution onto the bees in each occupied bee space with a syringe or an applicator. Maximum dose: 50ml per colony.

SUBLIMATION:
1g of Api-Bioxal per hive.
Seal the entrance and cracks oh the hives with tape. Use the vaporizer following the manufacturer's directions.

For Dribble: Dissolve oxalic acid in 1:1: sugar syrup as follows:

Api-Bioxal 35g (1.24oz) + Syrup 1L (0.26gal) — Syrup dilution 1:1 ratio Sugar/Water

You can also spray package bees following the label instructions.

TIPS:

- Always wear a protective mask, gloves, glasses, long sleeves, long pants, socks and shoes when mixing and applying oxalic acid.
- Oxalic acid works best on colonies with little to no brood.
- Do not perform multiple treatments on each generation of summer or winter bees.
- Do not treat during honey flows and wait 14 days before adding honey supers.
- Treat all colonies in the apiary at the same time to avoid reinfestation.