# IMPLANTS IN VETERINARY MEDICINE

- Most implants used in veterinary medicine are compressed tablets or dispersed matrix systems in which the drug is uniformly dispersed within a non-degradable polymer.
- Drug release from dispersed matrix systems involves dissolution of the drug into the polymer, followed by diffusion of the drug through the polymer into the surrounding aqueous environment.

There are two main groups within the implanted systems.

1-Implanted infusion devices,

** Peristaltic pumps,

** Implanted medical devices that can be programmed,

** Osmotic pumps,

2-Subcutaneous implants

## Oil-based liquids

Using relatively simple technologies, several successful controlled-release products have been launched, which provide controlled release via injectable systems.

## Ear implants

- The possibility of delivering sufficient quantities of either natural or synthetic progestagens from subcutaneous implants inserted under the skin of the ear has been investigated, mainly for production enhancement purposes.
- The implants are manufactured by incorporating the progestagen into one of two polymers, either hydron or silicone.

## SYNCRO-MATE-B® (CEVA, Libourne, France)

is a small ear-implant commercially available for use in cattle.

It is a veterinary estrus-synchronization treatment which consists of a synthetic progesterone (Norgestomet)-releasing subdermal implant of hidrophilic polyethylene glycomethacrylate, implanted between the skin and the conchal cartilage on the dorsal surface of one ear.

The implant is placed in the ear for nine days.

## COMPUDOSE® (Elanco Animal Health, Indianapolis, IN, USA)

is a polymeric controlled-release device for the delivery of estrodiol to improve both growth rate and feed efficiency in beef cattle.

The product is composed of a non-medicated silicone rubber core coated with a thin layer of medicated silicone rubber containing estradiol.

## ALZET®

**The ALZET osmotic pump (Alza)** is an implantable delivery system that can be programmed to release a drug at a predictable rate, either zero-order or pulse doses at fixed time intervals, when exposed to an aqueous environment.

The system was used successfully to induce fertile ovulation and oestrus in exotic cats and in pony mares.

**Ivomec® injection** is a solution of ivermectin in propylene glycol and glycerol formal that is given subcutaneously in cattle and pigs.

## ATRIGEL®

This system consists of biodegradable polymers dissolved in a biocompatible carrier.

The liquid polymer system is injected it forms a solid implant upon contact with the aqueous body fluids.

Atrigel has been investigated for the delivery of complex antigens, such as inactivated pseudorabies virus to pig.