

Cryptosporidium control

Dr Lucy Waldron



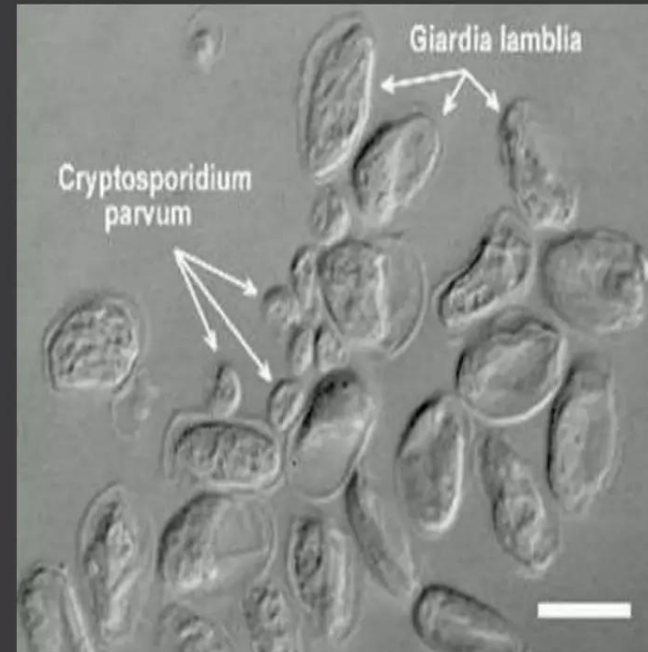
What is *Cryptosporidium*?

- *Cryptosporidium* spp. are protozoan parasites that cause diarrhoeal disease in humans and animals
- Golomazou *et al.* (2024): Agricultural contamination sources can cause water pollution in groundwater and different surface water used for drinking and irrigation.
- Protected by oocyte shell

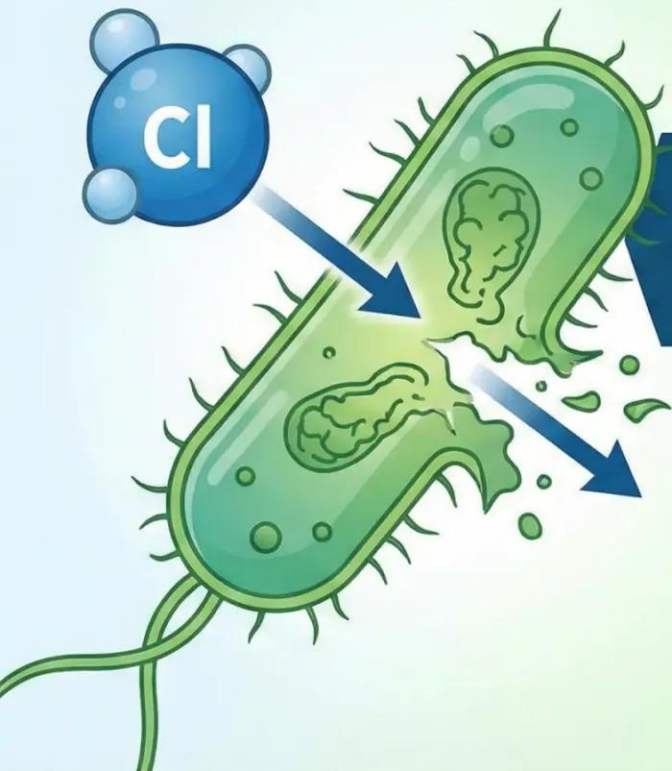


Pathogenesis

- *Cryptosporidium parvum*
- Primarily infects small intestine.
- Infections characterized by watery Diarrhea
- Impaired intestinal absorption.
- Forms oocysts
 - 4-6 μm in diameter
 - killed by ozone, desiccation

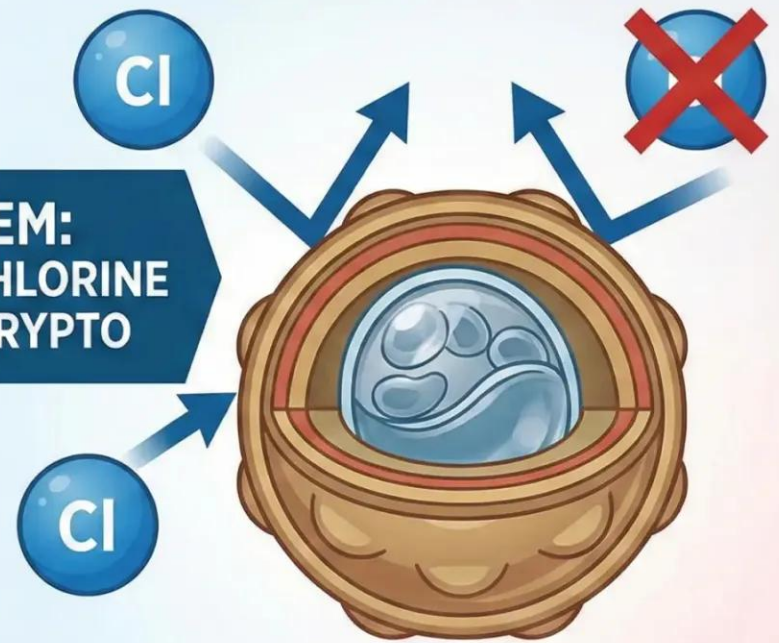


STANDARD CHLORINE vs. BACTERIA (Effective)



**THE PROBLEM:
WHY STANDARD CHLORINE
FAILS AGAINST CRYPTO**

STANDARD CHLORINE vs. CRYPTOSPORIDIUM (Ineffective)

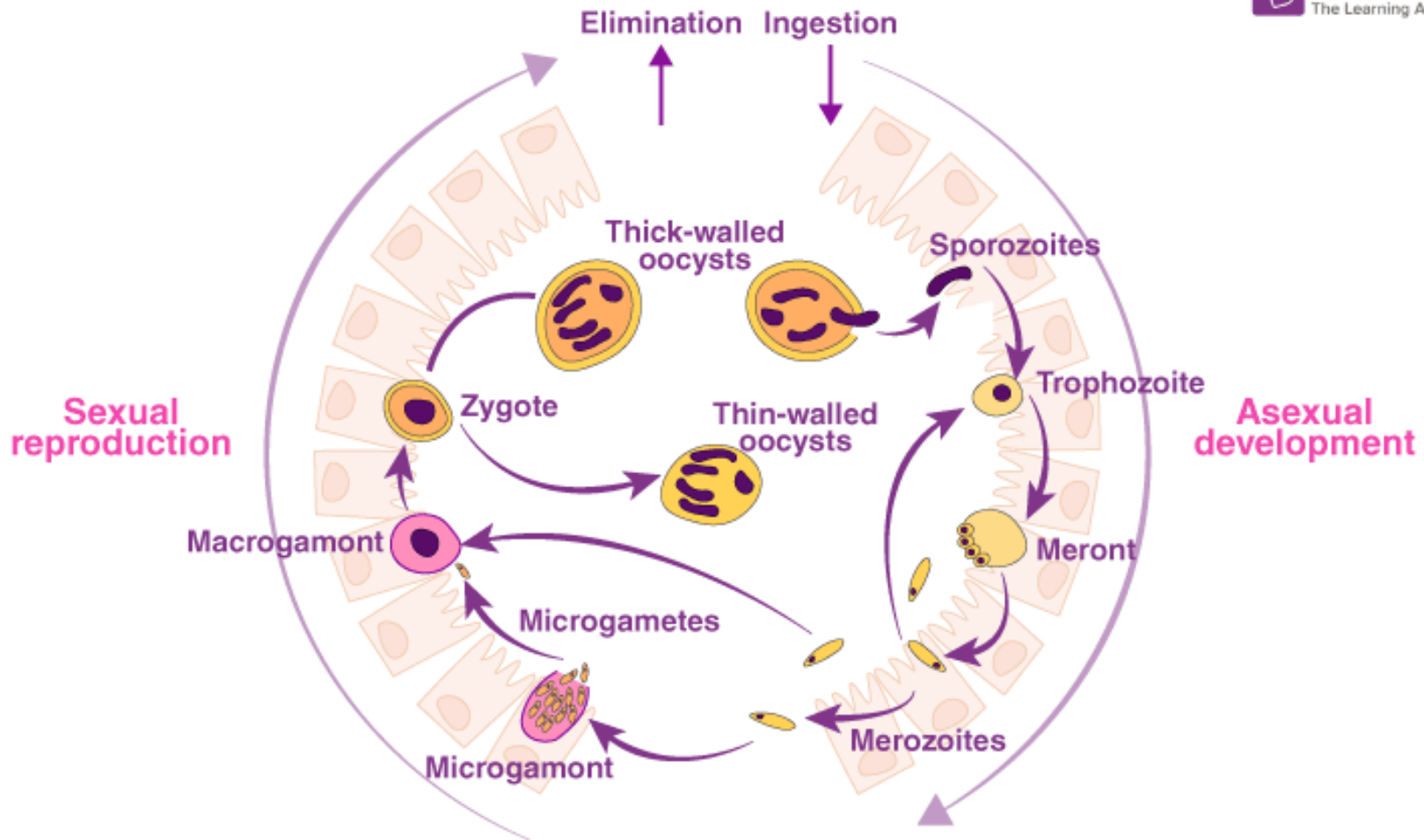


Crypto has a thick armored wall that resists standard chlorine.

Symptoms of Cryptosporidium infections

- Transmission by faecal-oral route
- Contact with infected animals
- Infection occurs 2-10 days post-contact
- Symptoms include: diarrhoea, dehydration, cramps, fever, loss of appetite, high mortality
- Affects young animals more severely





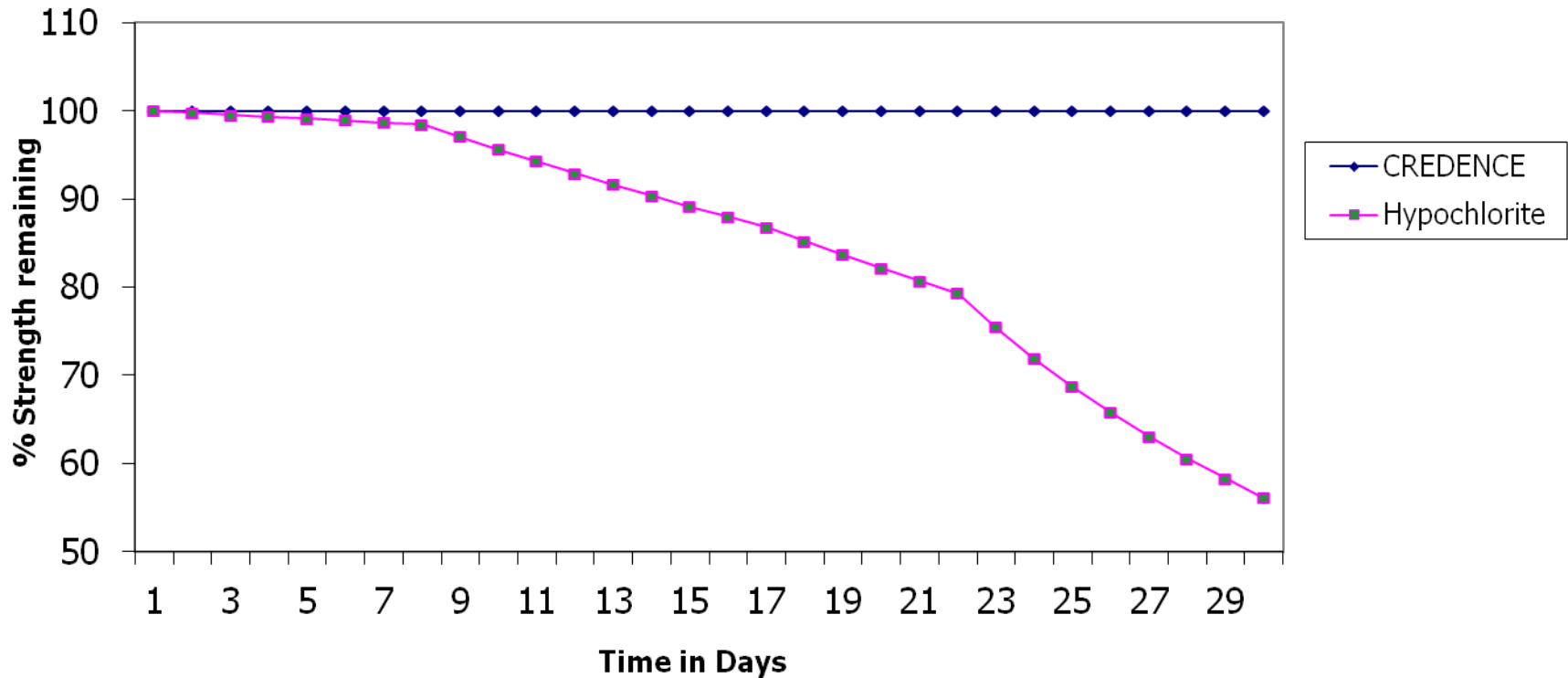
Control

- Volatile chlorine and other disinfectants cannot penetrate *Cryptosporidium* oocysts
- Stabilised chlorine does penetrate oocysts (as with *M bovis* biofilms)
- **Credence** active ingredient is stabilised, long lasting triclosene chlorine, proven to have penetration properties



Persistence over time

Sodium Hypochlorite Decomposition vs. CREDESCENCE Stability in Drinking Water



10% Hypochlorite (at manufacture), stored at 15C, half life = 460.7, CREDESCENCE tablets (stable >3 years)

Stabilised chlorine

- Chauret *et al.* (2000) *Cryptosporidium parvum* 1000 mg/litre inactivated up to 2 log₁₀ oocysts
- Long persistence required for full control
- Only certain forms of chlorine can breach biofilms, enveloped viruses and oocyst shells.



Effective containment and control

- Biosecurity and disinfection
 - Effective control by disinfection (<15 min kill)
 - Proven, fast kill, long persistence
 - Oocyst.biofilm penetration
 - Wheel & foot baths
 - Clean down calf facilities and calfeterias
 - ALLOW TO DRY COMPLETELY
 - Sanitise drinking water and colostrum/milk



Benefits of using Credence

- Can be added to colostrum, milk and drinking water
- Effective and safe for cleaning bottles, teats, calfeterias, pens, animals (as stock wash)
- Safe and effective for humans and animals
- Controls all pathogens, including bacteria (including biofilm producers), viruses (including enveloped forms) and protozoa
- Does NOT increase water pH to levels which prevent mineral uptake (a major problem with chlorine dioxide)
- Non-toxic, no chlorine smell, non corrosive



Dosing for application

Use	1 tablet in
Biosecurity/footbaths	5 litres
Equipment washing	10 litres
Non-porous surfaces	15 litres
Hand/udder washing	10 or 100 litres
Water systems clean out	200 litres
Drinking water/troughs	1000 litres

