ColoBoost pet powder

Colostrum supplement

For newborn puppies and kittens

Immunity line

raizup my Pet NUTRITION CARE

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What is colostrum?

- Definition
  - 1st milk produced at birth
    - Production started 3 weeks before whelping
    - According to the authors, colostrum is produced during the 2 or 6 first days of life
  - Aspect:
    - Thick liquid
    - Yellowish color

What is colostrum?

- Composition :
  - Substantially different from the milk
    - Energy rich (3 times more than milk)
    - Protein rich (immunoglobulins Ig*)
    - Trace elements rich (iron, copper, zinc)
    - Vitamin rich (vitamins A, B1, B2, C)
    - Growth factors (Insulin like Growth factor (IGF) and GF)
  - ➢ Brings vital nutrients to the newborn puppy/ kitten

- Roles:
  - ➢ Energy (heat)
  - ➢ Puppy/ kitten immunity
  - ➢ Laxative properties (meconium expulsion)

*immunoglobulins = antibodies

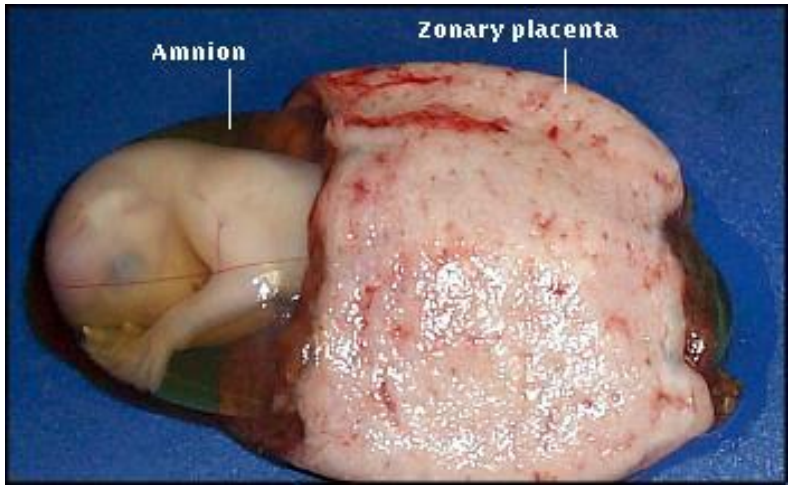
What is colostrum?

- Energy supply
  - A newborn dog needs 120kcal/ kg of BW per day during its first week of life.
    - Mosier JE, 1981
  - Low energy stock
    - Few glycogen reserves in muscles
    - Hepatic control of blood sugar : non working
  - Important energy losses
    - Important body area size compared to weight

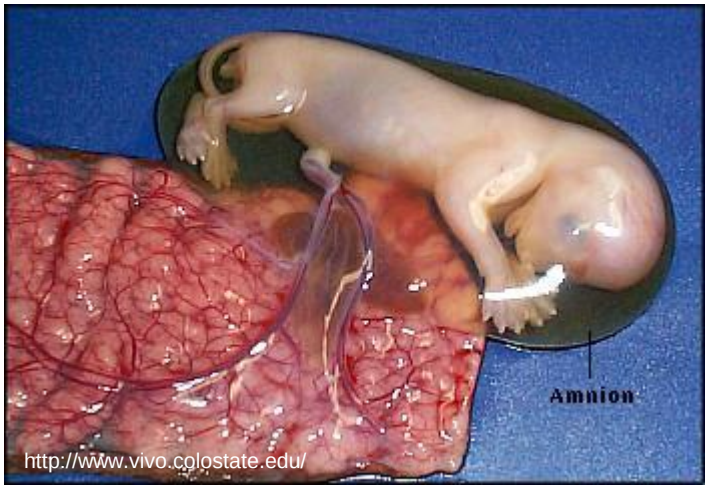
    ➢ Sensibility to hypoglycemia

What is colostrum?

- Puppy/ kitten immunity:
  - Zonary placenta
  - low antibodies transmission before birth
    - Dogs: 5% of Ig are transferred before birth
    - Cats: 10% of Ig are transferred before birth



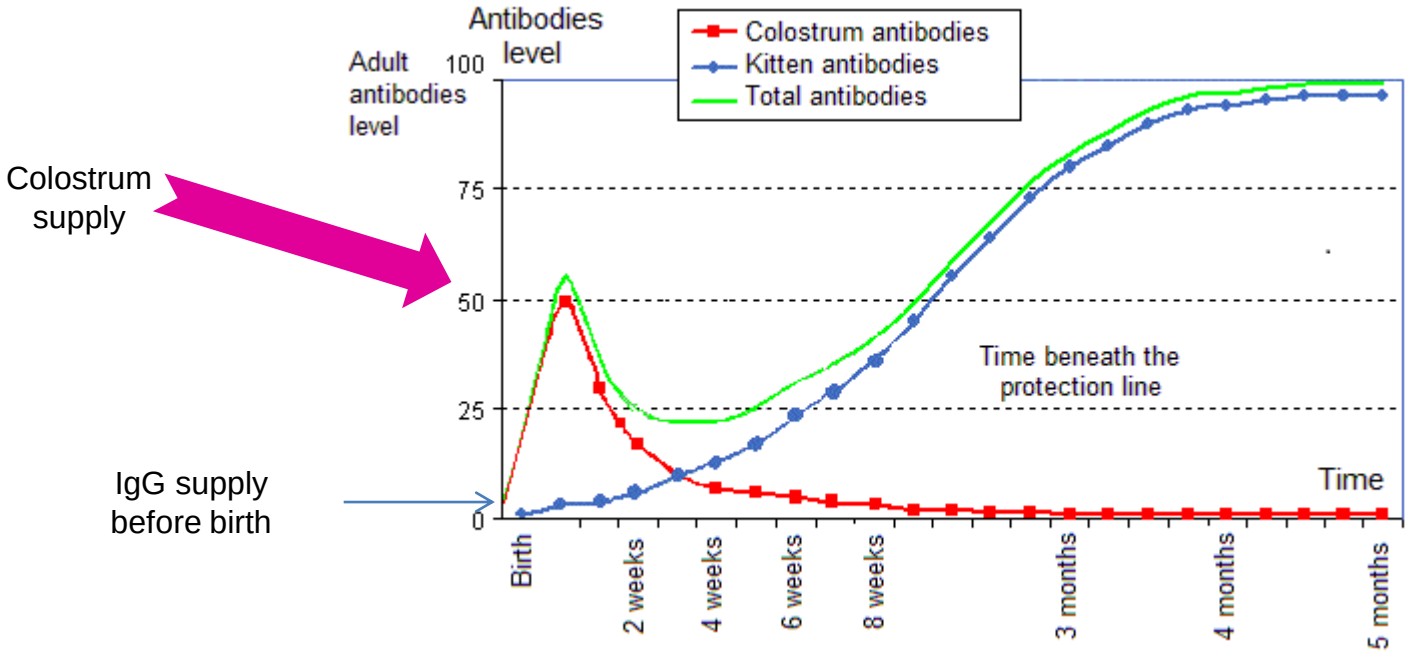
Placenta contains 5 layers in pets



Opened placenta

What is colostrum?

- Puppy/kitten immunity :
  - At birth, immune system doesn't work
    - External immunity needed



Kitten example

What is colostrum?

- Puppy/kitten newborn immunity

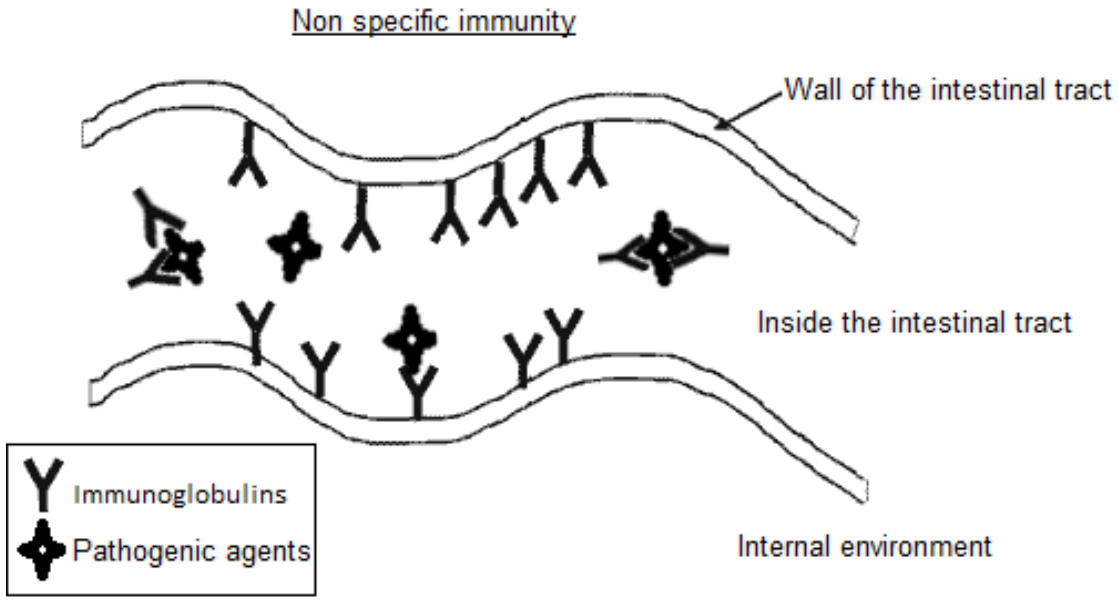
  Colostrum provides 90% (kitten) to 95% (puppy) of immunoglobulins to the newborn

  - General immunity
    - Time limited Ig absorption*
      - Puppy:
        - » Maximum till 8 hours after birth
        - » Disappears within 24 hours
      - Kitten:
        - » Maximum till 12 hours after birth
        - » Disappears within 16 hours

*: V.Segalini – Le colostrum des animaux domestique – DVM thesis - Alfort National Vet School 2007

What is colostrum?

- Puppy/kitten newborn immunity
  - Local immunity
    - Non absorbed Ig are useful in the gut



What is colostrum?

- Benefits for digestive system
  - Uruakpa F, 2002
  - Epidermal growth factor [EGF], involved in gut wall repair
  - Tumor growth factor-α [TGF-α] and ß- [TGF-ß], activating cell proliferation, and tissue growth, maturation and repair
  - Insulin-like growth factors & binding proteins [IGF & IGFBP], gastrointestinal growth & maturation factors with pronounced anabolic and wound-healing characteristics
  - Platelet-derived growth factor [PDGF], also implicated in gastrointestinal development & maturation
  - Vascular endothelial growth factor [VEGF], implicated in perivascular gastrointestinal growth & maturation
  - Growth hormone.

What is colostrum?

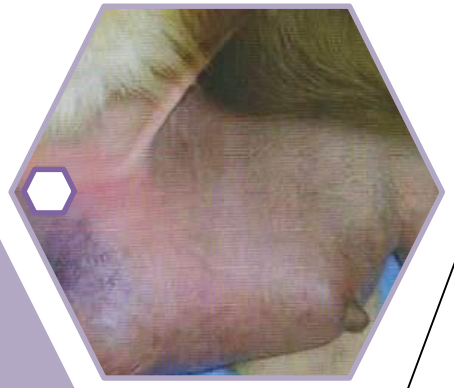
- Summary:
  - Key role of colostrum
    - Energy supplier
      - Active newborn => good colostrum intake
    - Immunization for the first weeks of age
    - Start up of digestive system

  - Weakness of newborns:
    - Around **20% of puppies** die in puppy farms, mostly during the two first weeks of age (Delabarre M, 2014).
      - 41% of mortality of puppies occurs during the first week of age (Tonnenssen R. *et al.* 2012)
    - Around **19% of kittens** die in kitten farms, mostly during the first week of age.

ColoBoost pet target

- In addition to colostrum intake in case of:
  - Inadequate colostrum quantity
  - Bad colostrum quality
  - Low colostrum intake

ColoBoost pet uses



Old bitch
Accident at parturition
Caesarean section
Mastitis on one quarter

Low quantity of colostrum

Big litter

Low quality of colostrum

Early lactation
First whelping
Badly fed bitch

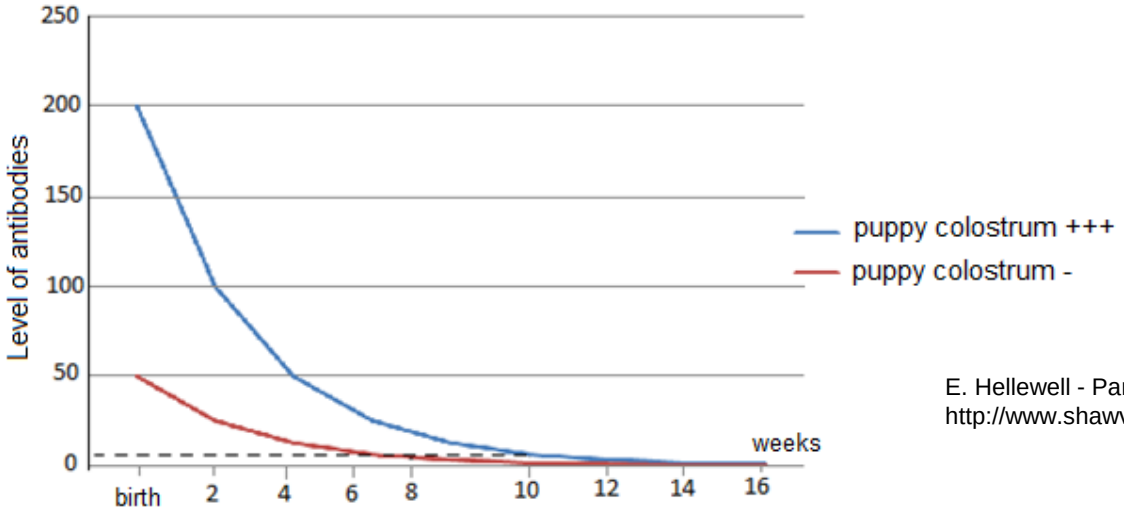
Low colostrum intake

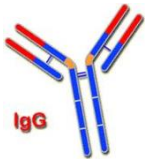
How does ColoBoost pet work ?

- Brings colostrum :
  - Standardized quality and quantity:
    - Milked in selected cow farms
    - Why a cow colostrum?
      - Rich colostrum:
        - » Protein concentrated (x2)
        - » Lipids and trace elements concentrated
        - » Vitamins A, B and E concentrated (x100)
      - Immunostimulant effect
        - » Non specific stimulation (complement factors…):
          - Pandey et al. (2011). Bovine colostrum: A veterinary nutraceutical. *Journal of Veterinary Medicine and Animal Health*, *3*(3), 31-35.
        - » Cross protection against some pathogens
          - Giffard *et al.* (2004). Benefits of bovine colostrum on fecal quality in recently weaned puppies. *The Journal of nutrition*, *134*(8), 2126S-2127S.
      - Canine pathogen free
        - » Virus: Infectious canine hepatitis, distemper
        - » Parasites: *Toxocara canis, Toxocara Cati, Toxoplasma gondii*

How does ColoBoost pet work ?

- Brings colostrum :
  - **Puppy/ kitten immunization**
    - Benefit of an early supply of high quality of colostrum



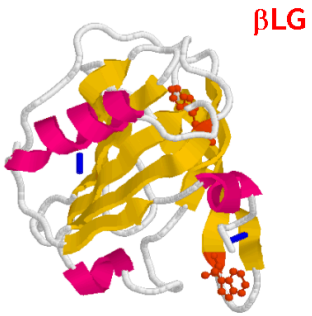


E. Hellewell - Parvovirus infection in dogs
http://www.shawvetcentre.co.uk

  - Gut stimulation
    - Noticeable with meconium evacuation

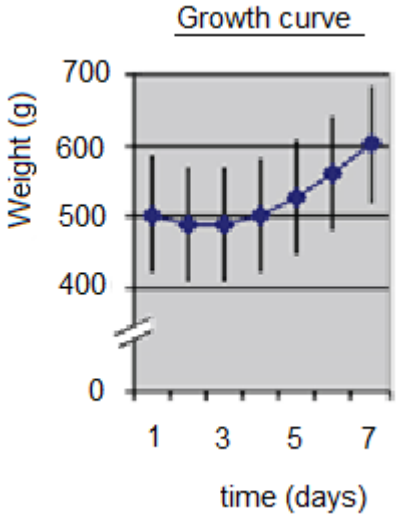
How does ColoBoost Pet work? Immunity

- Enhances pet immunity:
  - Whey proteins:
    - Beta-lactoglobulin
      - Implicated in the neonatal acquisition of passive immunity.
        - » Kontopidis et al., *Invited Review: β*-Lactoglobulin: Binding Properties, Structure, and Function. J. Dairy Sci. 87:785–796
    - Alpha-lactalbumin
      - As a multimer, bactericidal/ antitumor activity
    - Immunoglobulins



How does ColoBoost pet work ? Energy, metabolism

- Brings energy:
  - Easy to absorb: D-glucose
  - Lactose
  - Glycemia control
    - Hypoglycemia control: weakness, tremors, disorientation
    - Coma in worst cases
- Metabolism stimulant
  - Brings nutrients:
    - Proteins and glucose



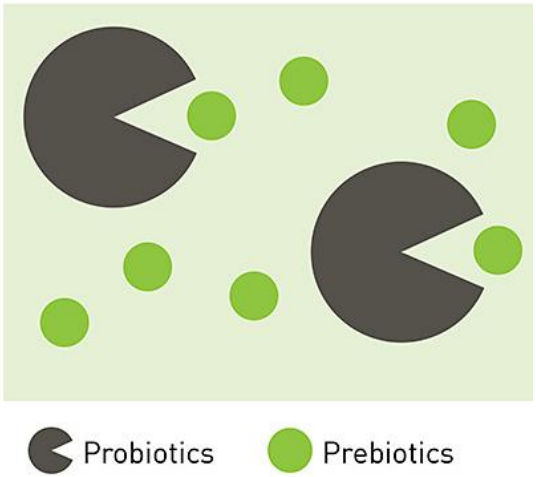
E. Bigliardi *et al.*, Physiological weight loss in newborn puppies of Boxer breed, Italian Journal of Animal Science, [S.l.], v. 12, n. 4, p. e77, oct. 2013.

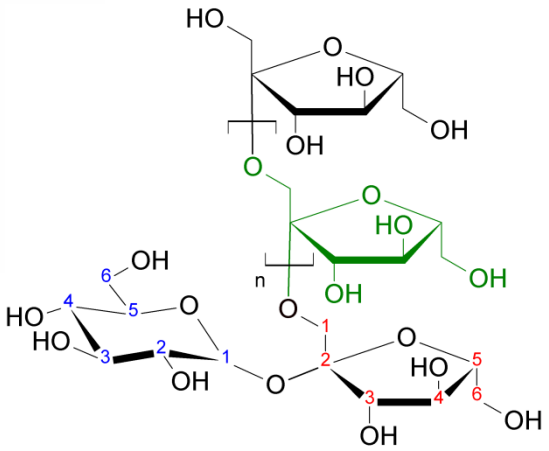
How does ColoBoost Pet work? Energy, metabolism

- Brings energy:
  - Through 2 metabolic pathways:
    - carbohydrates
      - Dextrose, lactose
    - proteins
      - Whey proteins, colostrum
  - Prevention of hypoglycemia
    - Weakness, tremor, disorientation, hyperactivity
    - Coma in worst cases

How does ColoBoost Pet work?
Gut protection

- Prebiotics
  - Chicory inulin
  - Feed the gut microflora





How does ColoBoost Pet work?

- High palatability:
  - Milky flavor
  - Sweet taste

ColoBoost Pet packaging

- Plastic box of 50g
  - One dosing cup
  - A baby bottle of 60 ml
- Plastic box of 72g
  - One dosing cup
  - A baby bottle of 60 ml

ColoBoost pet
Direction for use

- Prepare:
  - Filled the 60 ml baby bottle with clean and lukewarm water.
  - Add 4 g of COLOBOOST Pet (= one spoon supplied in the box) in the 60 ml feeding bottle.
  - Mix it.
- Program:
  - Give one dose as soon as possible after birth
  - Give a second dose 4-6 hours after
  - Give a third dose 6-8 hours after birth (puppies) / 8-12 hours (kitten)
- Dose:
  - Depending on the breeds size
  - Small size breeds puppies and kittens (body weight from 250 to 350 g at birth): 10 to 20 ml.
  - Medium size breeds puppies (body weight from 350 to 500 g at birth): 20 to 30 ml.
  - Big size breeds puppies (body weight from > 500 g at birth): 30 to 40 ml.

Before use or extension of use, it's recommended to ask for the opinion of a specialist.

Birth → Puppy before 8 h old / Kitten before 12 h old → Before 24h

Take home message
ColoBoost Pet powder

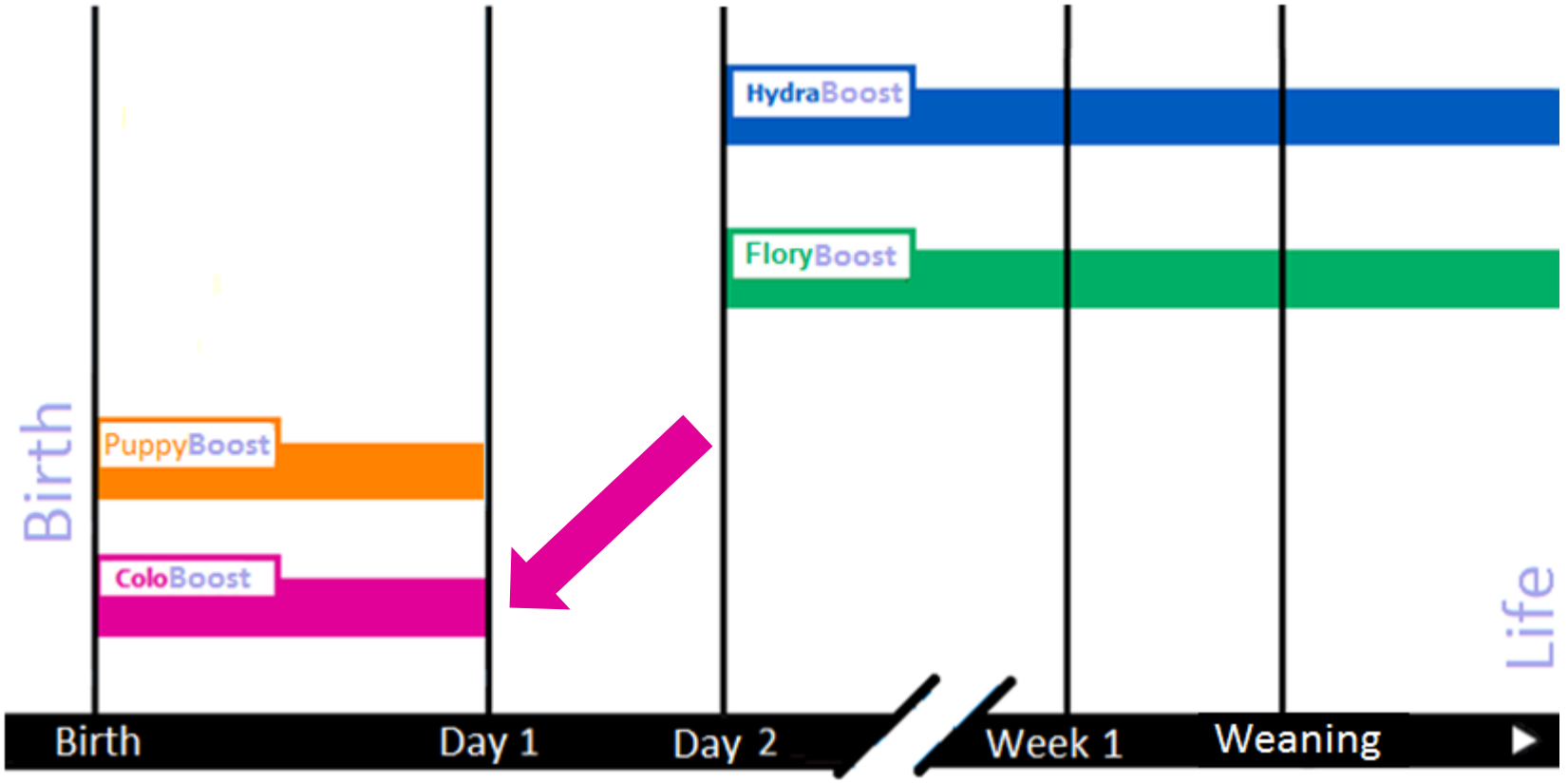
- Colostrum supplement for newborn puppies and kittens

- Targets:
  - Immune booster
  - Energy for a good start
  - Make start easier for the puppy/ kitten (gut stimulation and metabolism enhancement)

  In all cases when colostrum shortage is suspected

- Easy to administer

Puppy program



Puppy program

Puppy/ kitten stimulation at birth

- ColoBoost pet
  - Immunity booster
  - When ?
    - Bad quality of colostrum
    - Not enough colostrum
    - Early lactation (colostrum is turning to milk before birth : colostrum is poorer)

- PuppyBoost
  - Energy booster
  - When ?
    - Good quality of colostrum
    - Weak puppies and kittens
    - Cold or wet environment
    - Poor maternal instinct

ColoBoost pet powder

Thank you for your attention !

Immunity line

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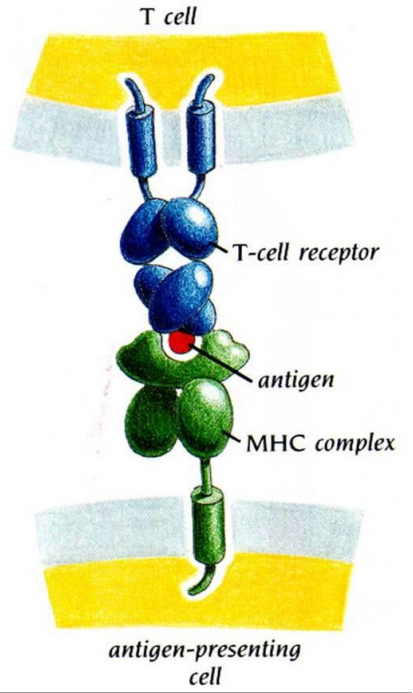
To learn more …

- Immunity:
  - Biological system made up with
    - Recognition elements that make difference between :
      - self
      - Non-self
    - Defense elements
      - non-specific
      - specific

To learn more …

- Immunity:
  - Recognition:
    - Discriminate self from non self
      - Immune cells are trained to that purpose
    - Recognition trough an “identity card »
      - Identity card= MHC: Major Histocompatibility Complex

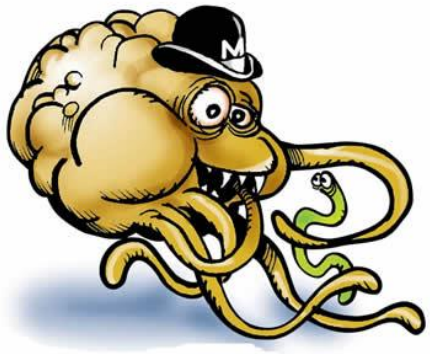
3D recognition (like a key-lock)



To learn more …

- Immunity:
  - Elements of non-specific defense
    - Mechanical elements: skin
    - Biological: macrophages …

Le macrophage « eats » cell fragments and pathogenic bacteria and virus



Natural killers are cells that destroy abnormal cells (infected cells, tumor cell…)

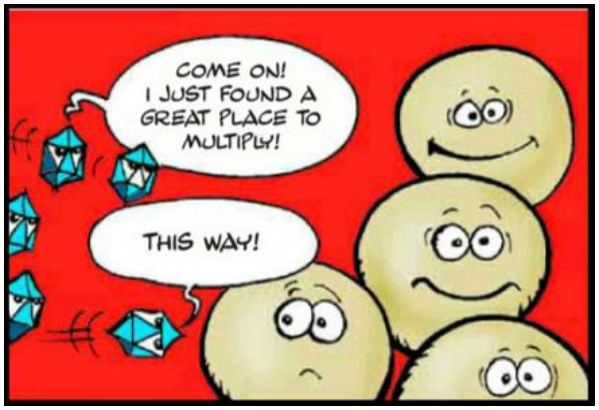
To learn more …

- Immunity:
  - Elements of specific defense

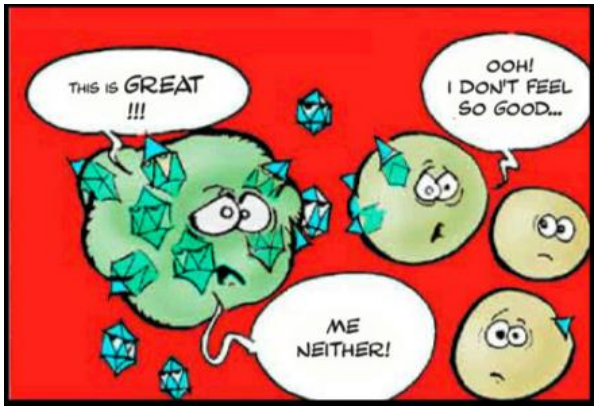
- Humoral response:
  - Lymphocytes B are cells which product immunoglobulins (antibodies). Immunoglobulins attach to antigen of foreign matter (virus, bacteria, parasite) or infected cells. This attachment help to neutralize them.

- Cellular response
  - Cytotoxic T cells destroy non recognized cells (infected cells, cancerous cell…)

To learn more …
The comic book of immunity

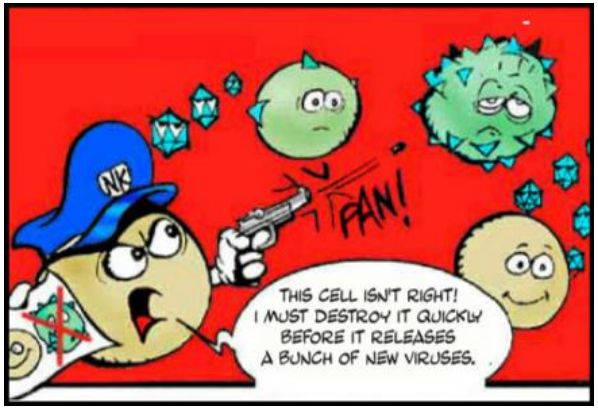


1. The viruses enter the body



2. The viruses multiply rapidly

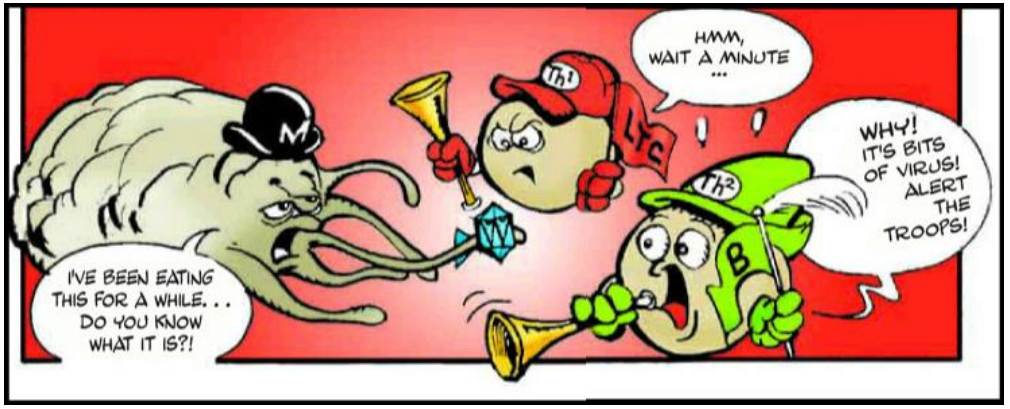
3. Viruses continue to multiply but a macrophage arrives at the site of infection



4. A sentry detects abnormal cells and destroys them.

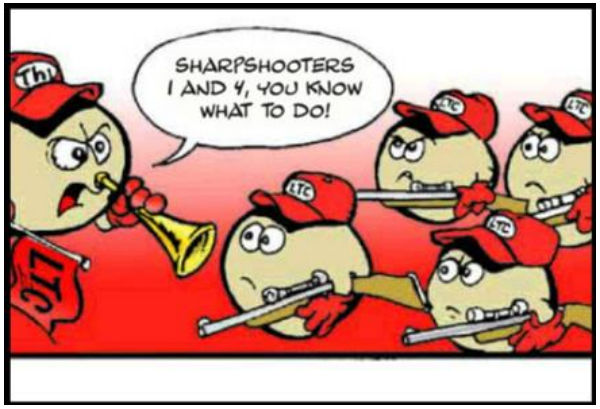
To learn more …
The comic book of immunity

5. The macrophage continues to gobble up the remaining debris



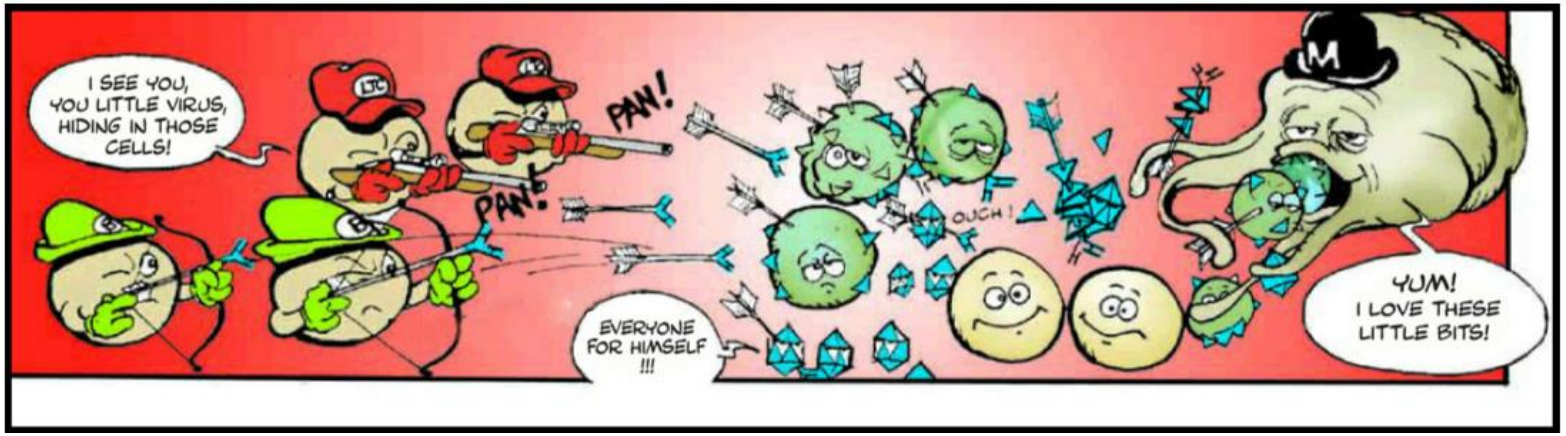
6. The macrophage gives information to the T helper cells

7. The T helper cells give information to lymphocytes B and selects the best cells for the task

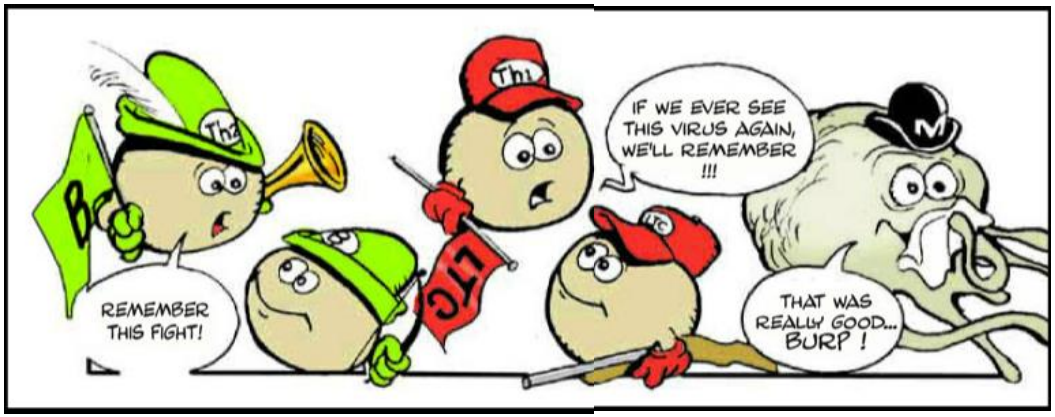


8. The T helper cells give information to the cytotoxic T cells and selects the best cells for the task

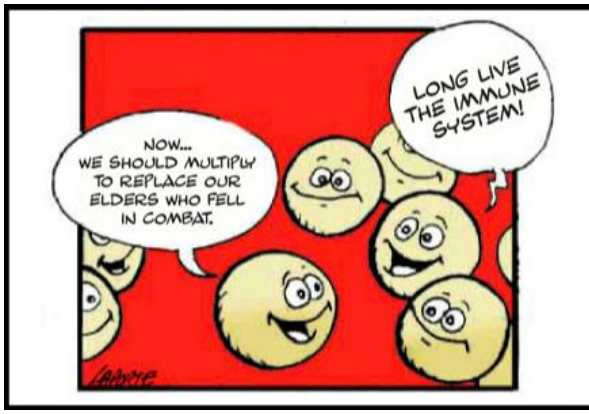
To learn more …
The comic book of immunity



9 Lymphocytes B with antibodies and cytotoxic T cells neutralize the viruses and the infected cells . Thanks to the antibodies, the macrophages easily recognize the virus



10. The immune system produces memory cells to prevent subsequent infection by the same virus

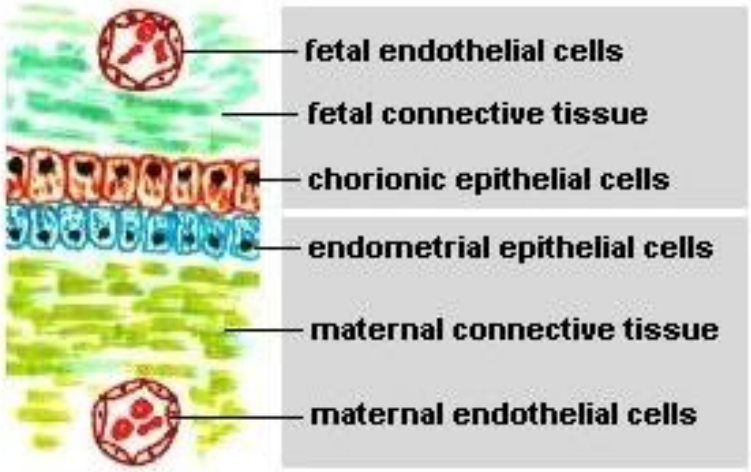


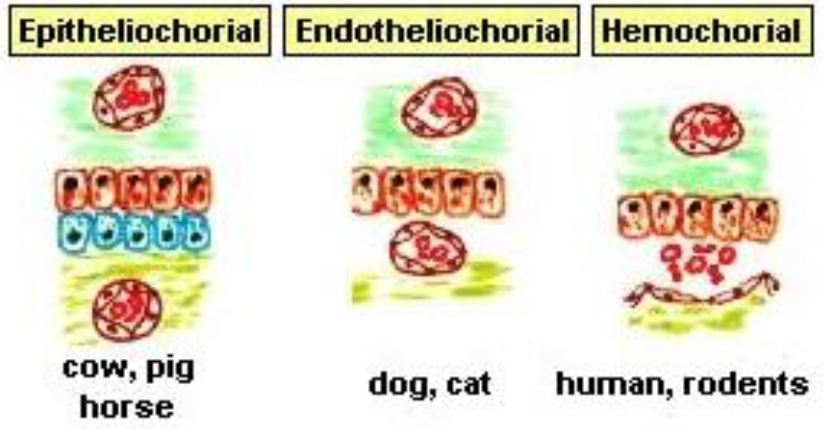
11. The body replaces the dead cells with the new ones, and life continues.

To learn more …

- Type of placenta

	Maternal Layers Retained			Examples
	Endometrial Epithelium	Connective Tissue	Uterine Endothelium	
Epitheliochorial	+	+	+	Horses, swine, ruminants
Endotheliochorial	-	-	+	Dogs, cats
Hemochorial	-	-	-	humans, rodents

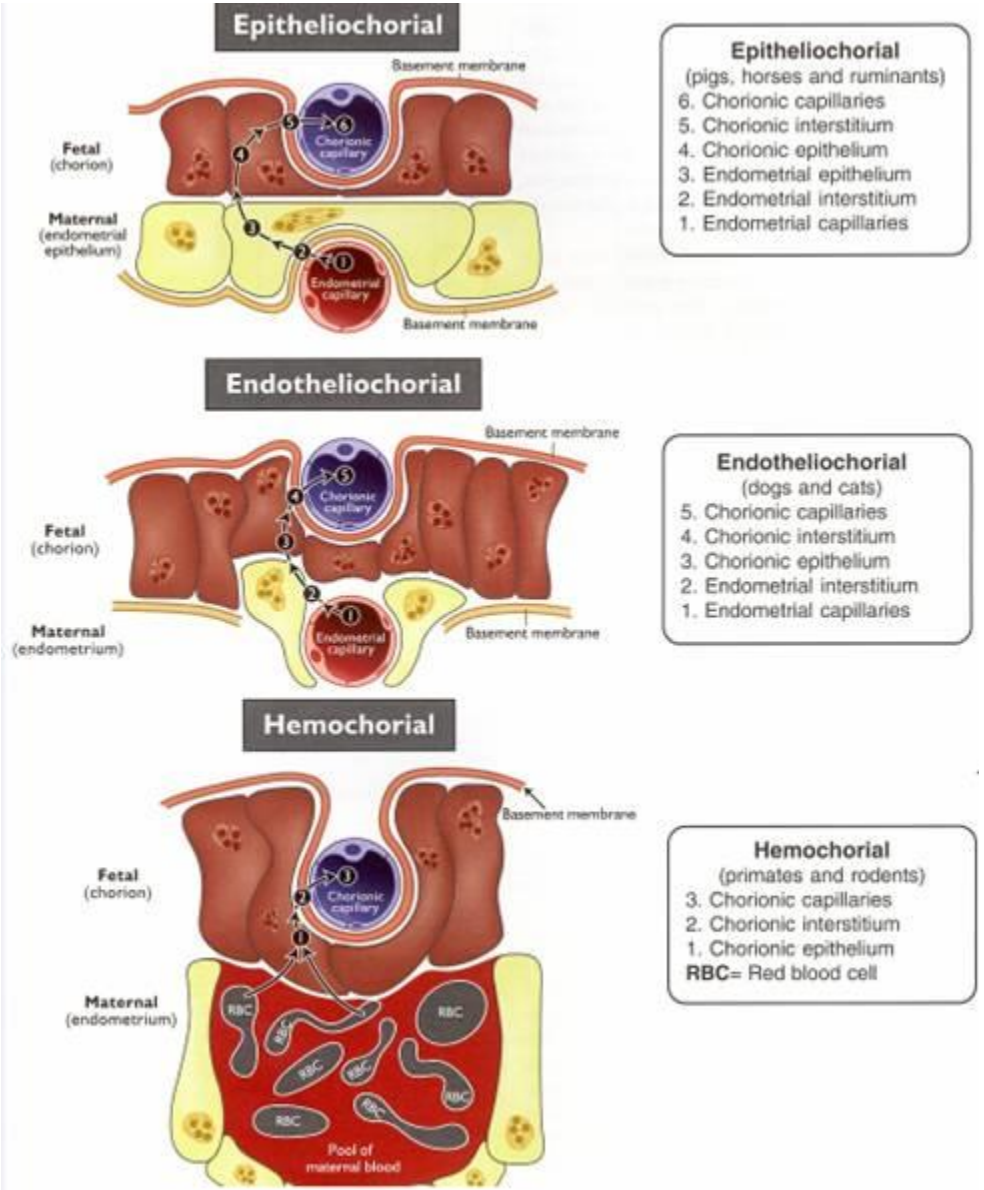




R. Bowen, Placental Structure and Classification, http://www.vivo.colostate.edu

To learn more …

Type of placenta



To learn more …

- Milk and colostrum composition

Comparison between colostrum and milk bitch composition according to Case *et al*. [CASE LP, CAREY DP, HIRAKAWA DA. Nutritional care of neonatal puppies and kittens. Canine and Feline Nutrition a Ressource for Companion Animal Professionals, Mosby, 223- 231.] et Adkins et al. [ADKINS Y, LEPINE AJ, LONNERDAL B. Changes in protein and nutrient composition of milk throughout lactation in dogs. Am. J. Vet. Res., 2001, 62, 1266-1272.] modified from Oftedal and Bebiak

	Colostrum	Milk
Proteins (g/L)	80 à 143	75
Lactose (g/L)	10 à 44	30 à 58
Fats (g/L))	24 à 130	25 à 130
Moisture content (%)	88	77,3 à 85
Raw energy (Kcal/L)	640 à 1800	1460
Calcium (mg/L)	360 à 980	1880 à 2400
Phosphorus (mg/L)	935	1400 à 1800
Iron (mg/L)	3,7 à 13	0,7 à 10,5
Copper (mg/L)	1,3 à 1,8	0,33 à 1
Zinc (mg/L)	5 à 10	4,1 à 16
Magnesium (mg/L)	59 à 128,5	85,8 à 128
Manganese (mg/L)	0,15	0,30

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