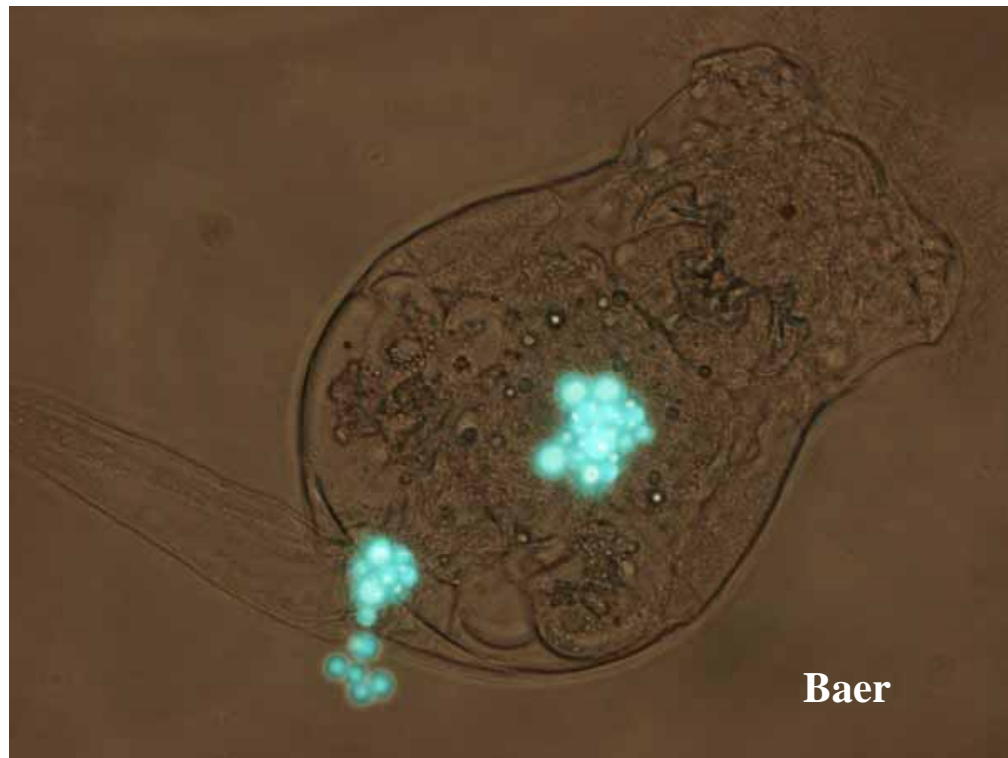




Delivery of water soluble micronutrients to rotifers (*Brachionus plicatilis*)

with emphasis on minerals



Andreas Nordgreen, Samuel Penglase and Kristin Hamre



	Rotifers	Copepods
	mg/kg	mg/kg
Iodine	3.2 ± 3.4	50-350
Manganese	4.4 ± 0.2	8-25
Copper	3.1 ± 0.4	12-38
Zinc	63 ± 5	340-570
Selenium	0.08 ± 0.01	3-5
Vitamin C	220	553 ± 360
Thiamine	2 - 125	13 - 23

Hamre et al., 2008

Van der Meeren et al., 2008

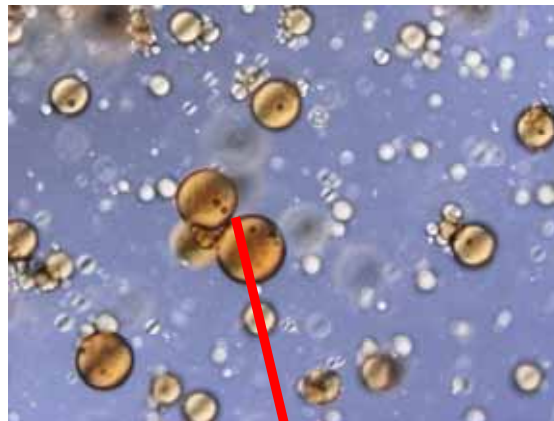


1. Is it biological possible to reach copepod levels?
2. Will the rotifer survive copepod levels of minerals?
3. Can rotifers be used for dose response studies?

Mineral salts



Encapsulated minerals



Organic minerals



Fatsoluble derivates

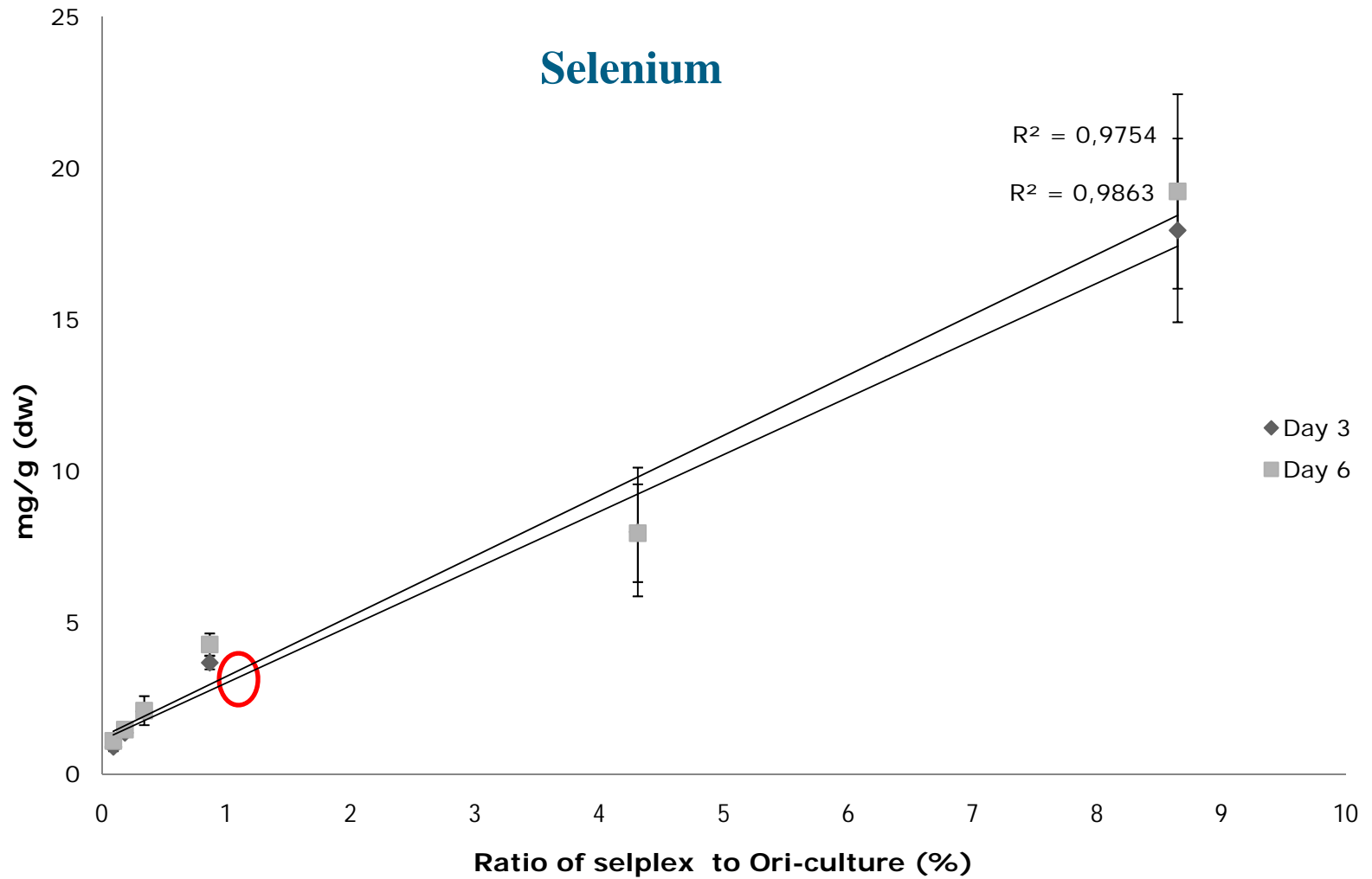


-Eating
-Digestive uptake

-Diffusion
-Drinking

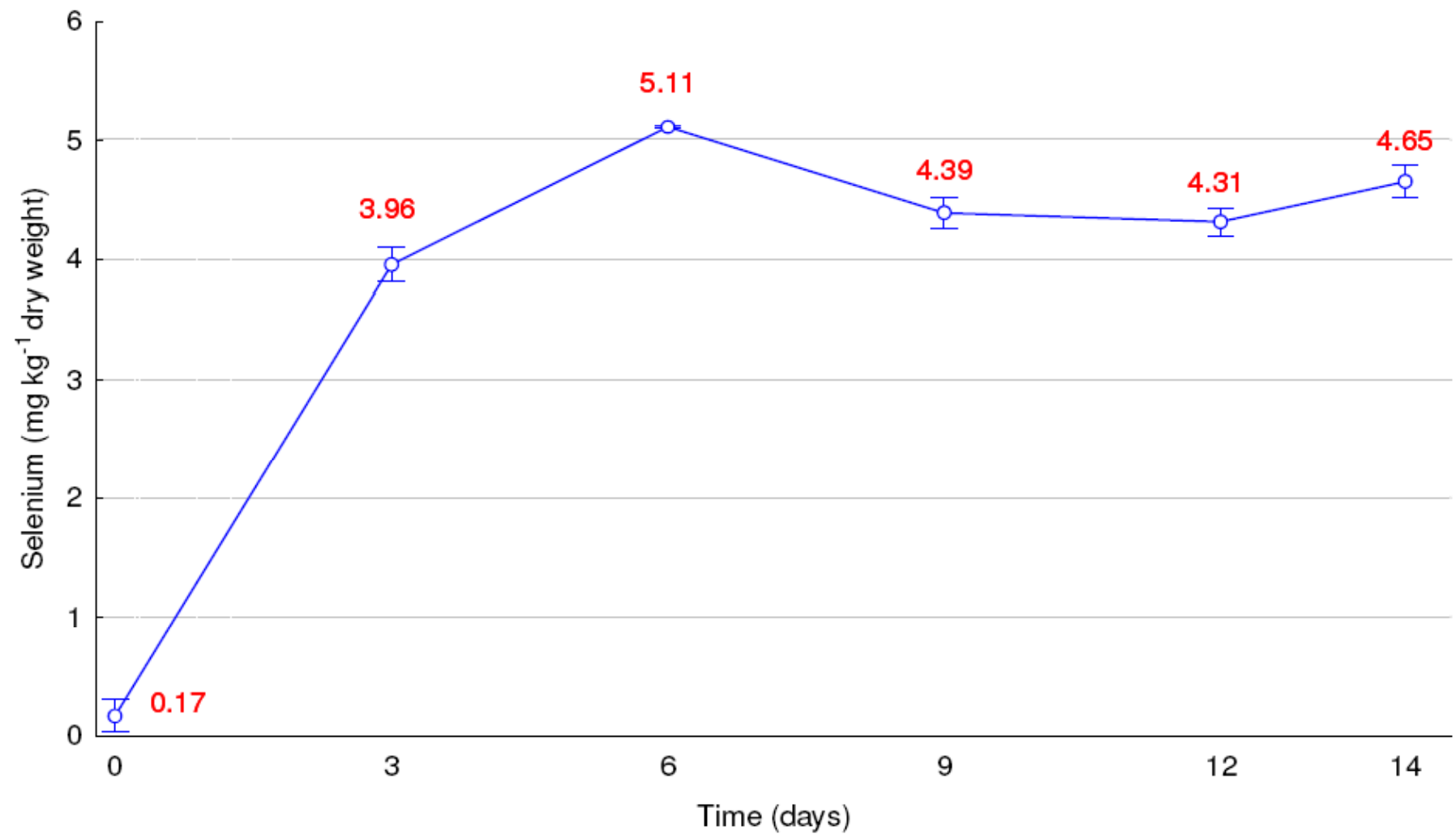


Delivery of nutrients during culture phase



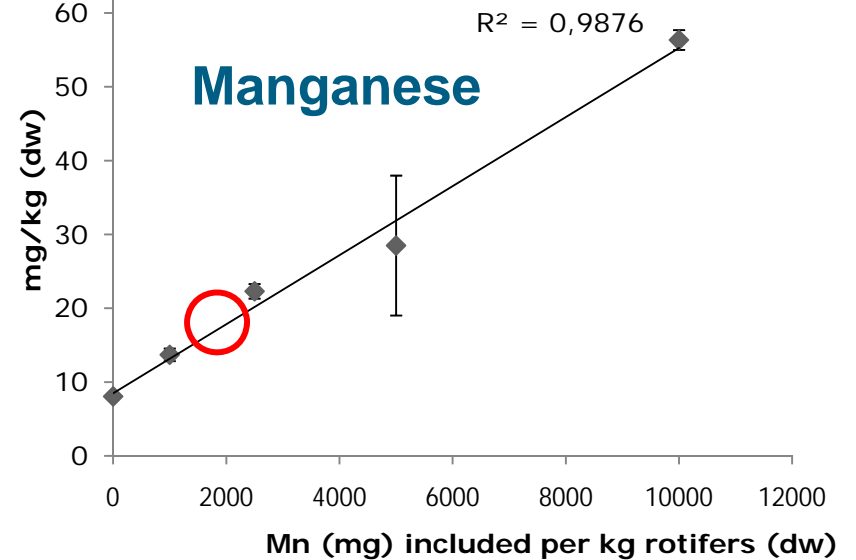
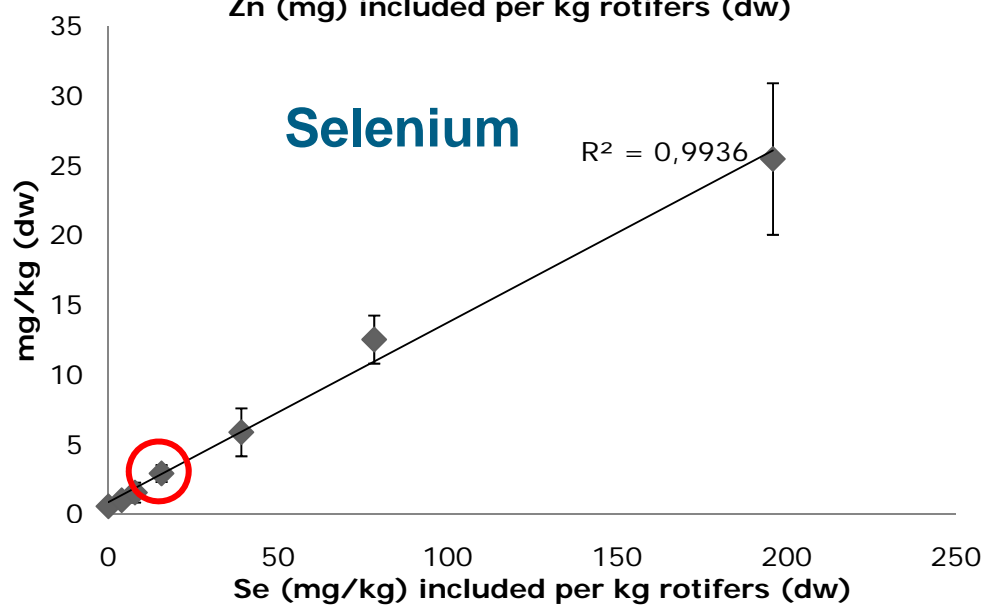
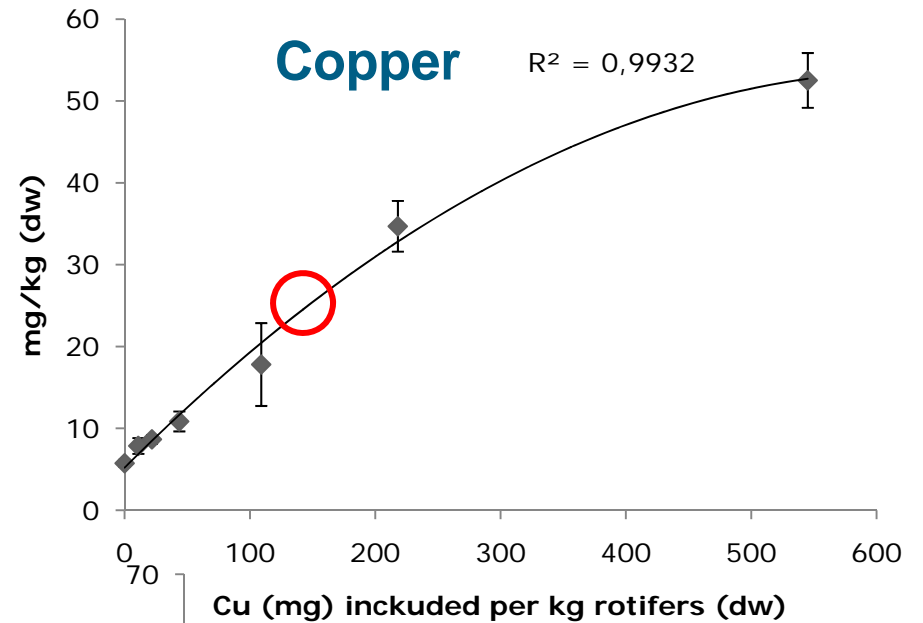
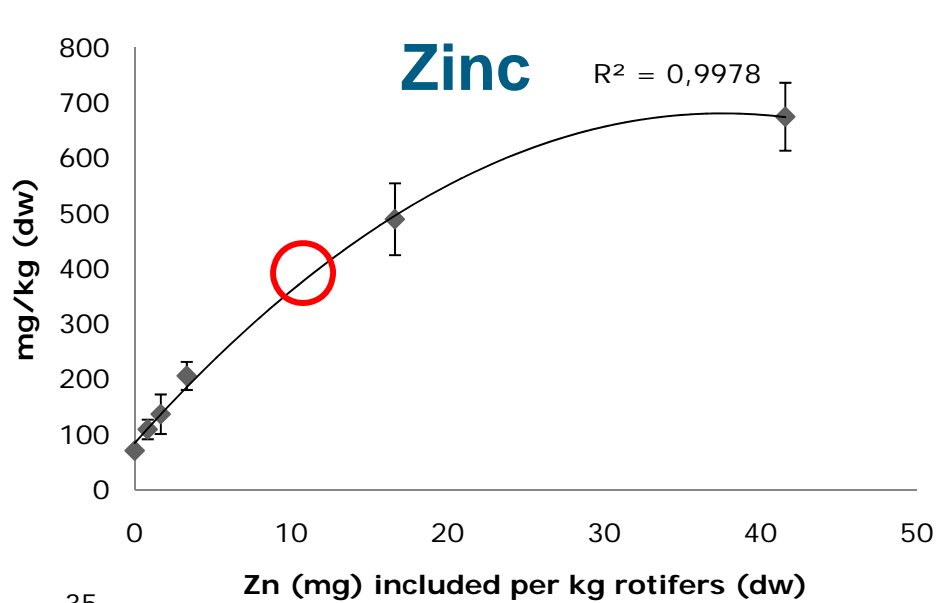


Delivery of selenium during culture phase



0.5% of the enrichment diet (dw)

Short term enrichment with minerals



< 10 % (dw) of the enrichment diet

Retention efficiency

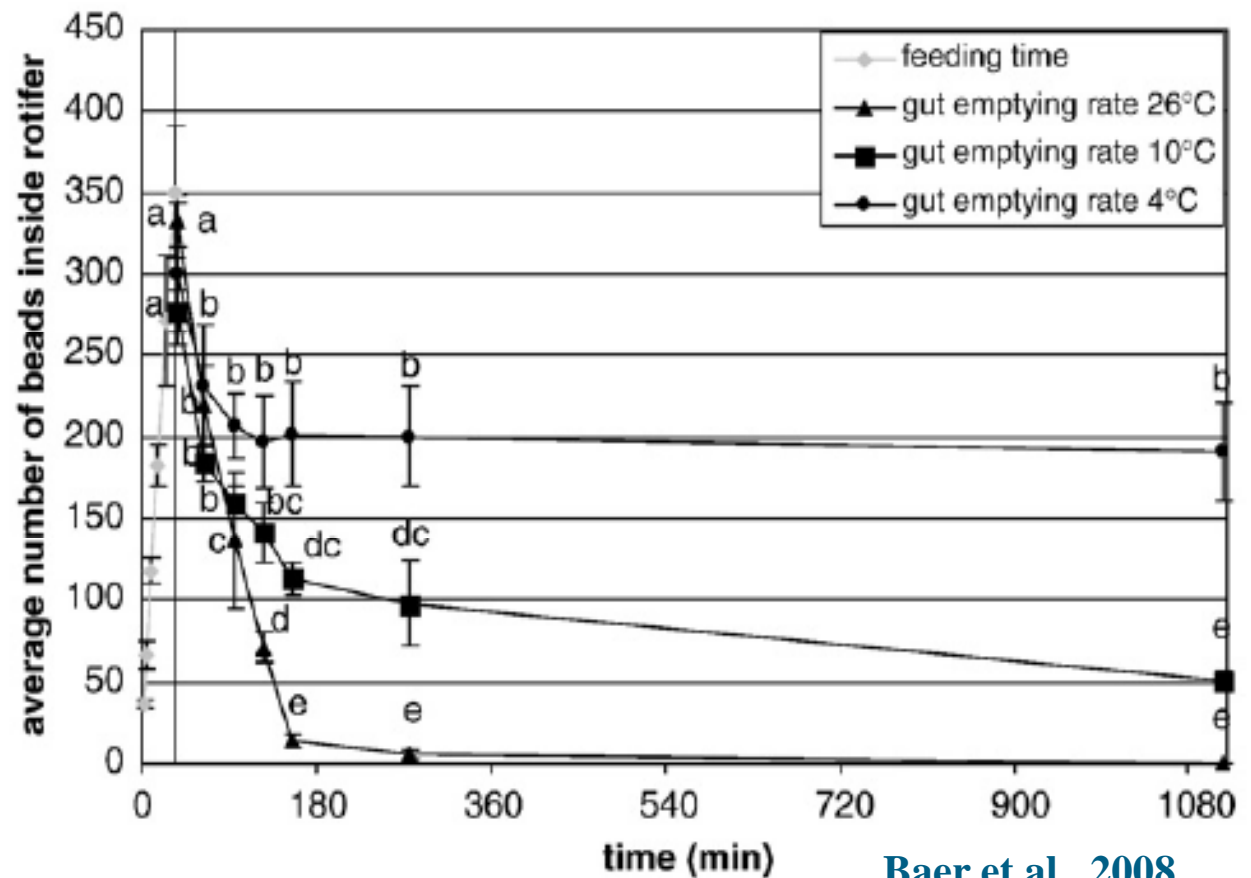
N I F E S



2-20 hours storage

Gut evacuation

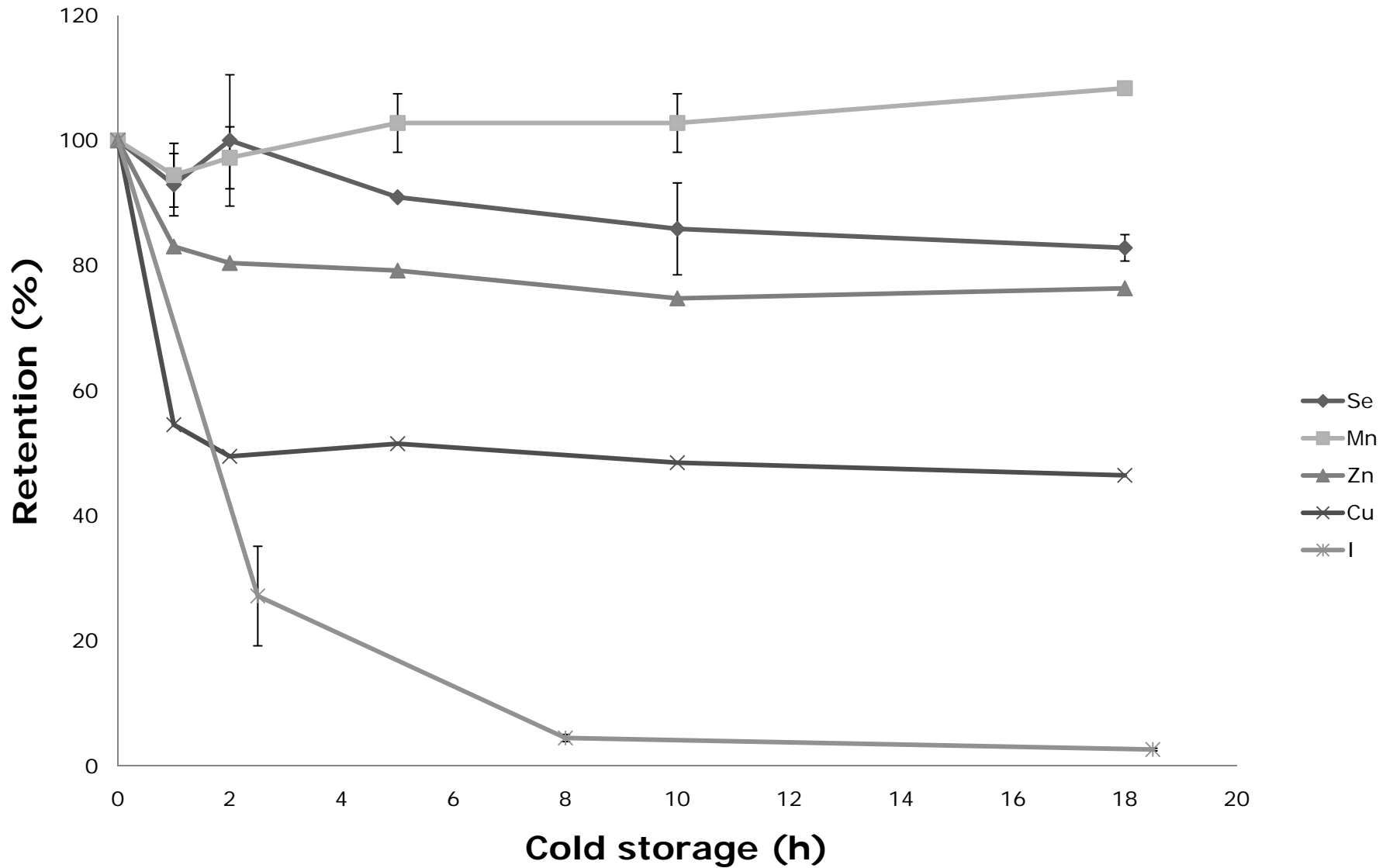
Metabolism



Baer et al., 2008

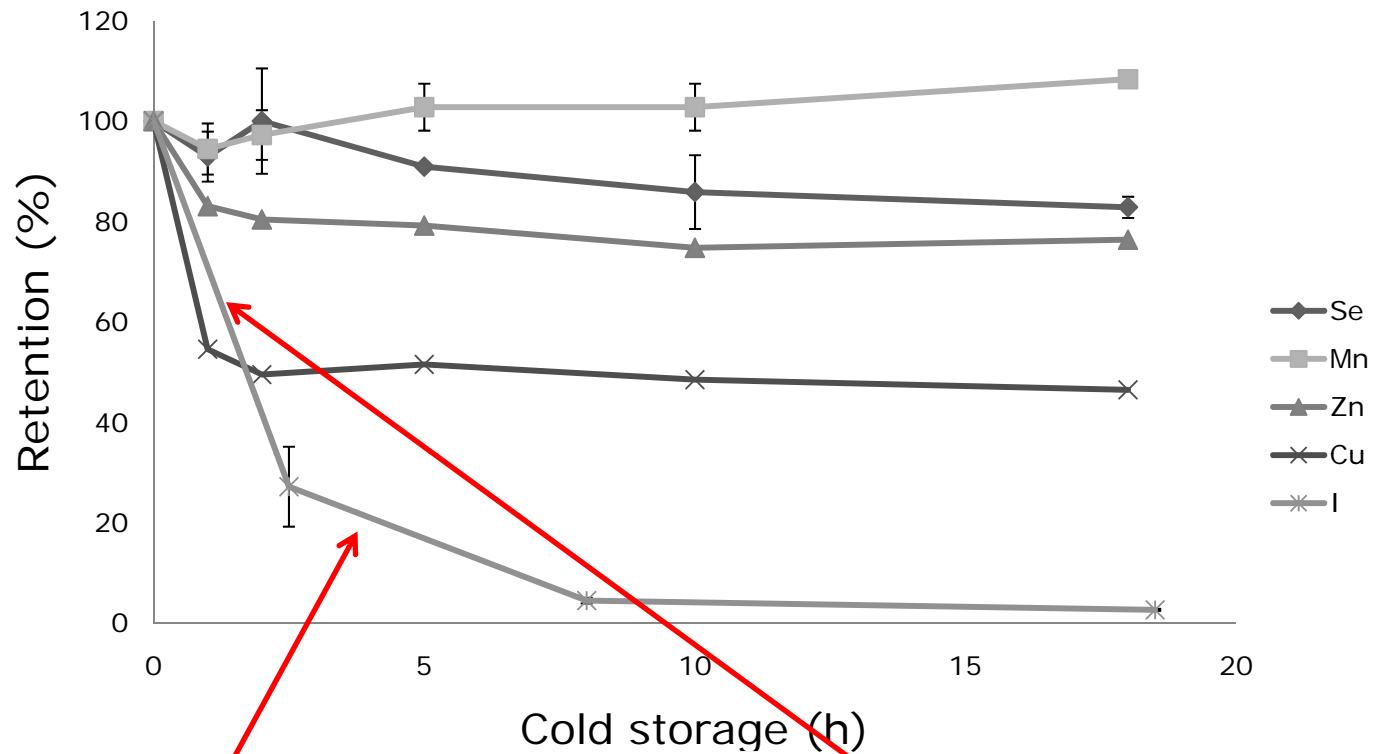


Retention efficiency





Retention efficiency



	I mg/kg (dw)
Controll	1.76 ± 0.51
I + rotifers	1.89 ± 0.81

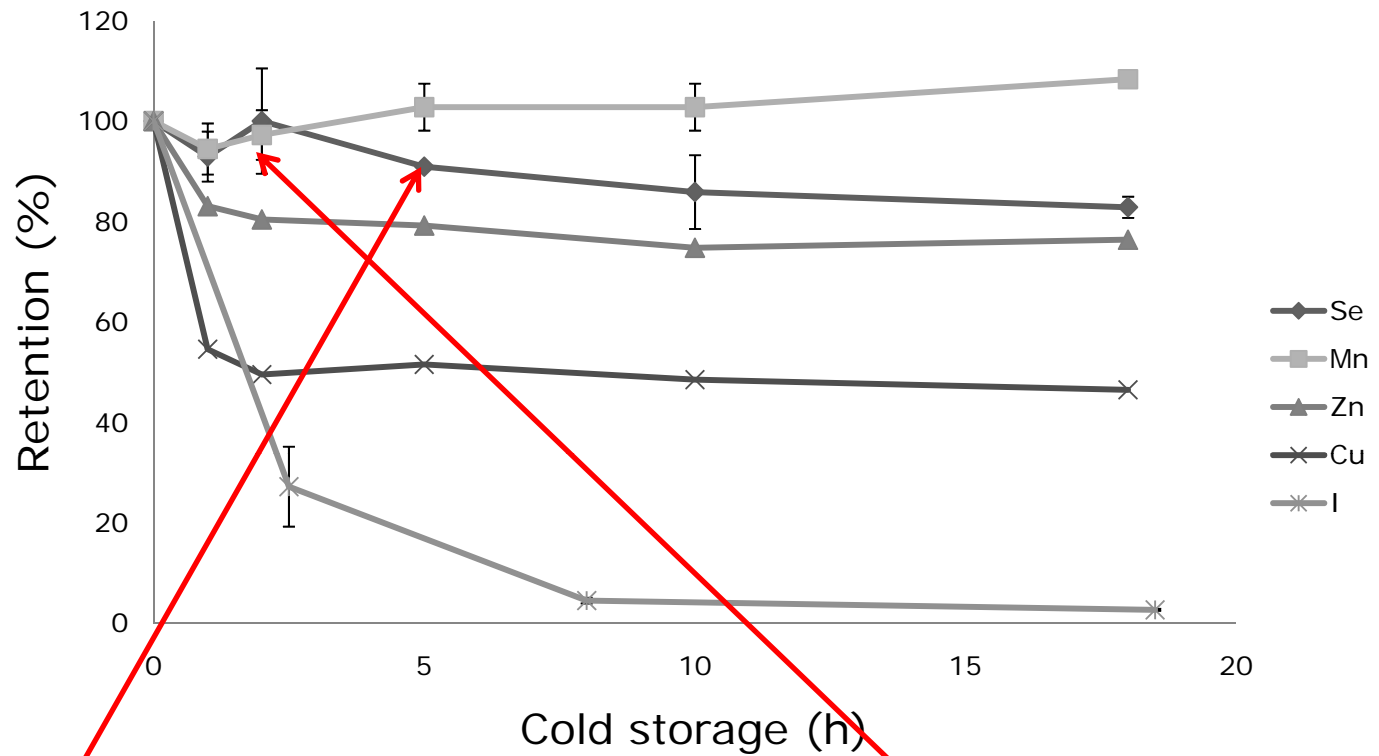
	I mg/kg (dw)
Controll	0.9
I +	6.9 ± 1.2

Hamre et al., 2008



Retention efficiency

N I F E S



	I mg/kg (dw)
Controll	1.1 ± 0.3
Se + rotifers	3.5 ± 0.1

	Se mg/kg (dw)
Controll	0.88 ± 0.02
Se +	3.99 ± 0.15

Hamre et al., 2008



1. Concentration of Cu, Se, Mn, Zn can be controlled over a large range.
2. Minerals can be delivered both during the culture and enrichment stage.
3. Good retention of Se, Mn and Zn (Cu ??)
4. Retention of iodine needs to be improved
5. Rotifers can be used in dose response studies



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