

NAUTILUS

Hereditary Hemochromatosis is an autosomal recessive genetic disease where the body absorb through the stomach too much dietary iron ! Terrible consequences can be observed such as cancer, liver disease, ...

As of today there is no viable treatment



Our solution is simple, producing a pill containing an absorbing iron bacteria !

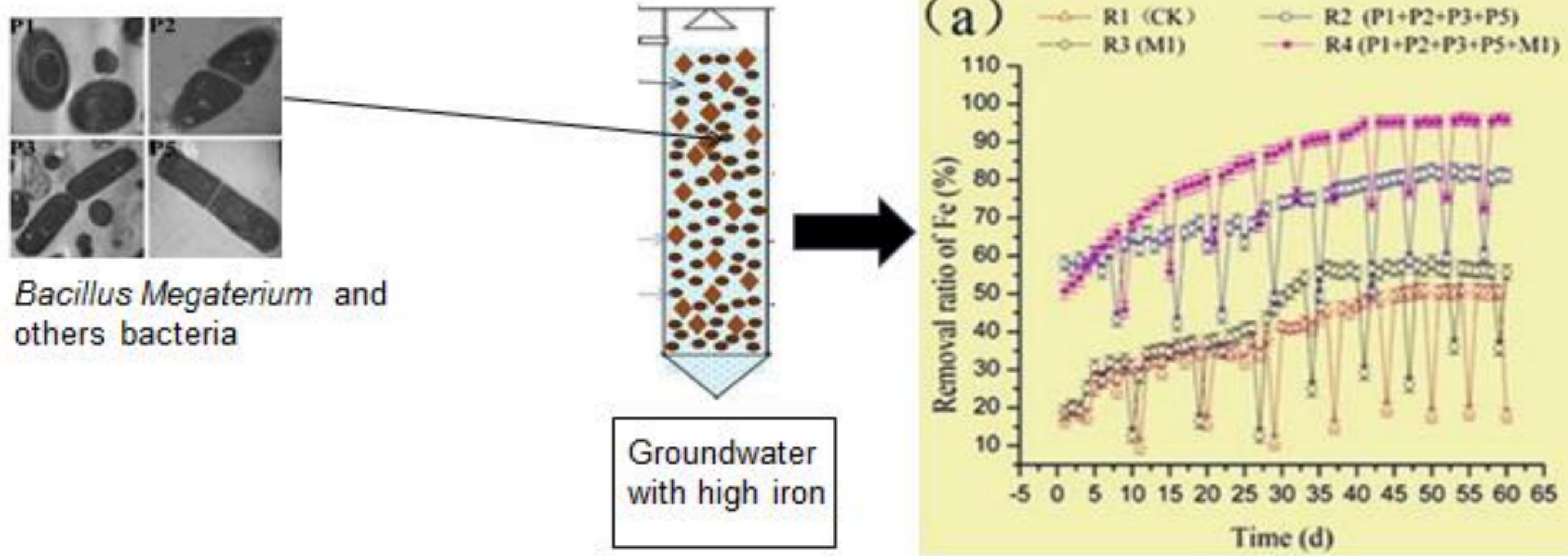
We will deliver the pill in the stomach where the bacteria will absorb the excess iron



1. What kind of bacteria are we going to choose ?

Bacteria: Bacillus Megaterium

Important Features: Non pathogenic, Absorb iron, Adapt to acid stress condition (really important since the bacteria will be release in the stomach)



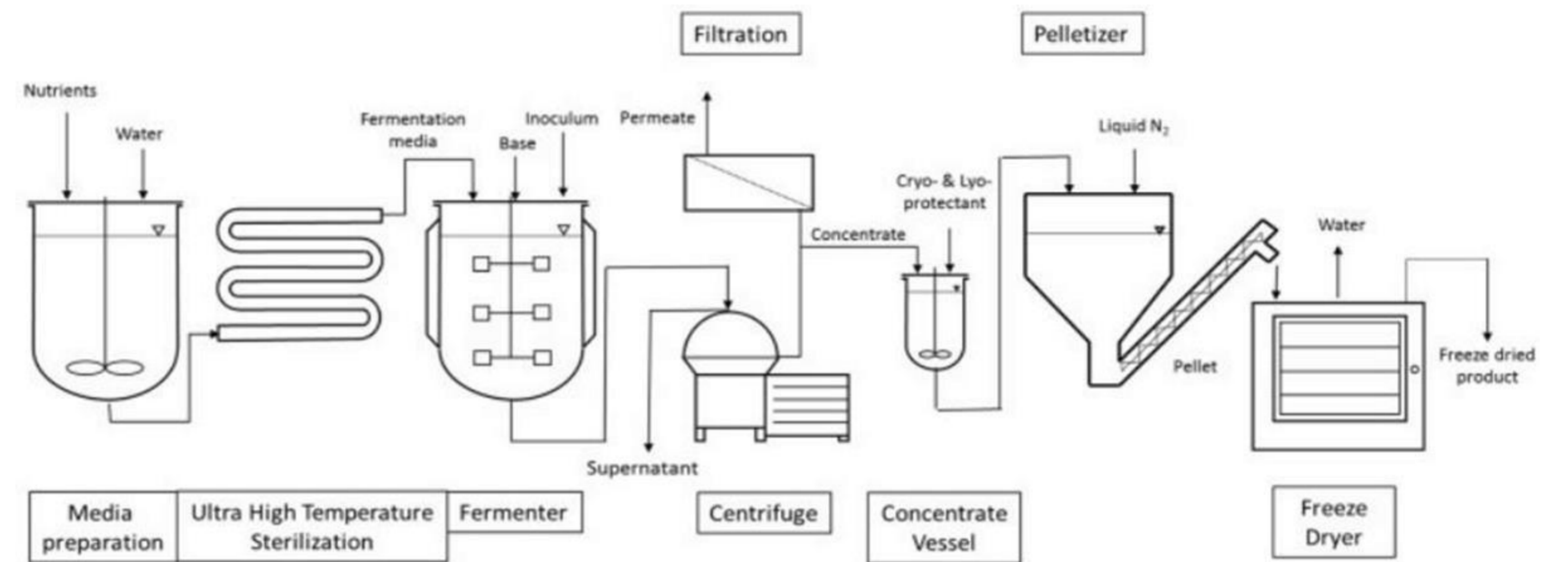
1. Study on the efficiency of iron absorption by *Bacillus Megaterium*

Chunyan Li, Shuting Wang, BioresourTechnol, 2016

2. How can we deliver the bacteria to the patient ?

We want to use the same procedure as for the probiotics:
Why?

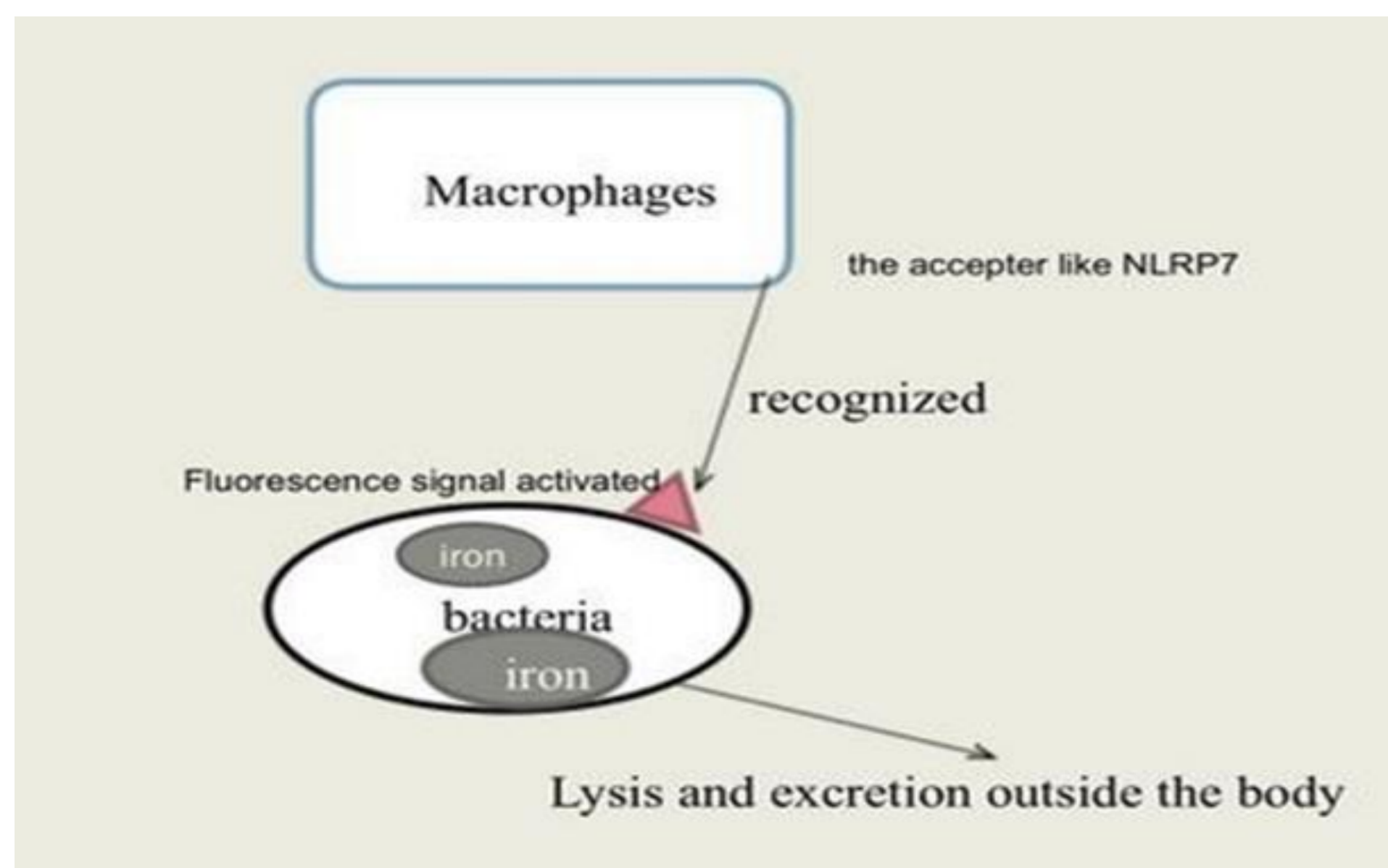
1. Both are bacteria
2. They are delivered to the stomach
3. The protocol of production is safe and well known



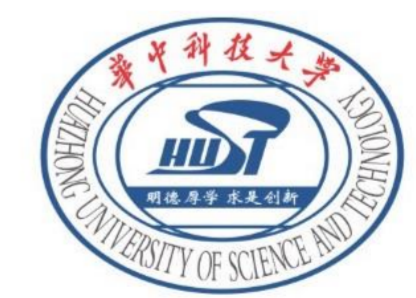
2- Schematic representation of the production of Probiotics for dietary supplements Kurt Fenster, Microorganisms, 2019

3. How can we discharge the bacteria from the body ?

1. Modification of the bacteria lipopeptide by fluorescence signal
2. Bacteria + Iron = Fluorescence signal activate
3. Macrophage + signal activated = Lyse of the Bacteria
4. Excretion of the bacteria



3. Schematic representation of our model of excretion



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