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- prolongation of life -

Statement: ProBion technique is the most optimal vehicle for probiotics!

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ProBion® - the smart tablet

Wasa Medicals **patented technology** and the innovative aspects of the process:

- a unique **low compression technique**
- the use of both prebiotics and probiotics in a tablet
- better preserving the quality of the cultures since it involves less pressure, reduced splint forces and less heat development
- unique **low a_w exipients** in the tablet; **a_w** = 0,1-0,2

Survival during production equals 80-95 %

The tablets have the additional advantage of a **slow-release profile**, which enables viable bactera to expose the gastrointestinal tract under a prolonged duration.

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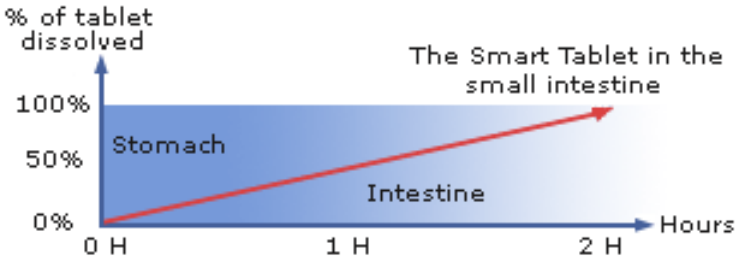
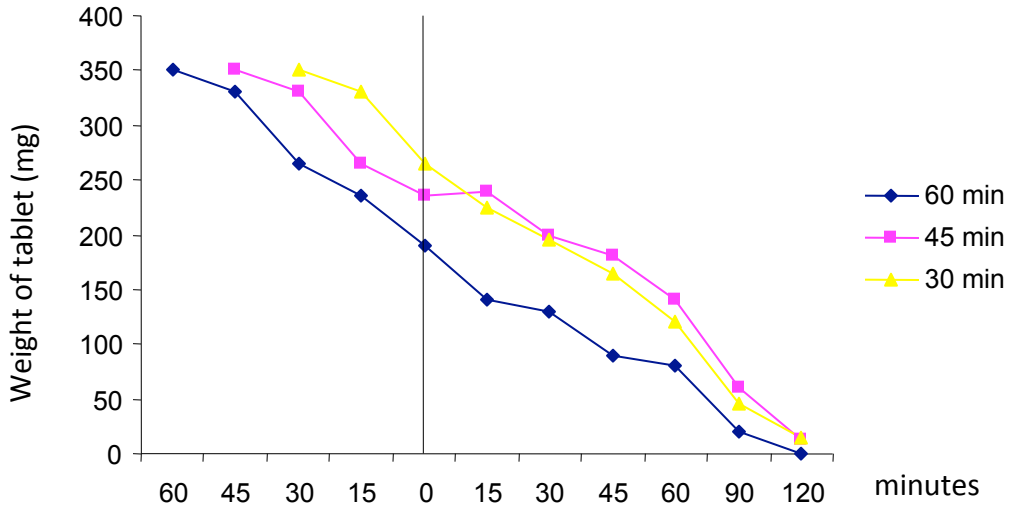


ProBion®

the controlled release tablet

Analysis of disintegration profile of ProBion® according to Européan Pharmacopé 4.1.3.



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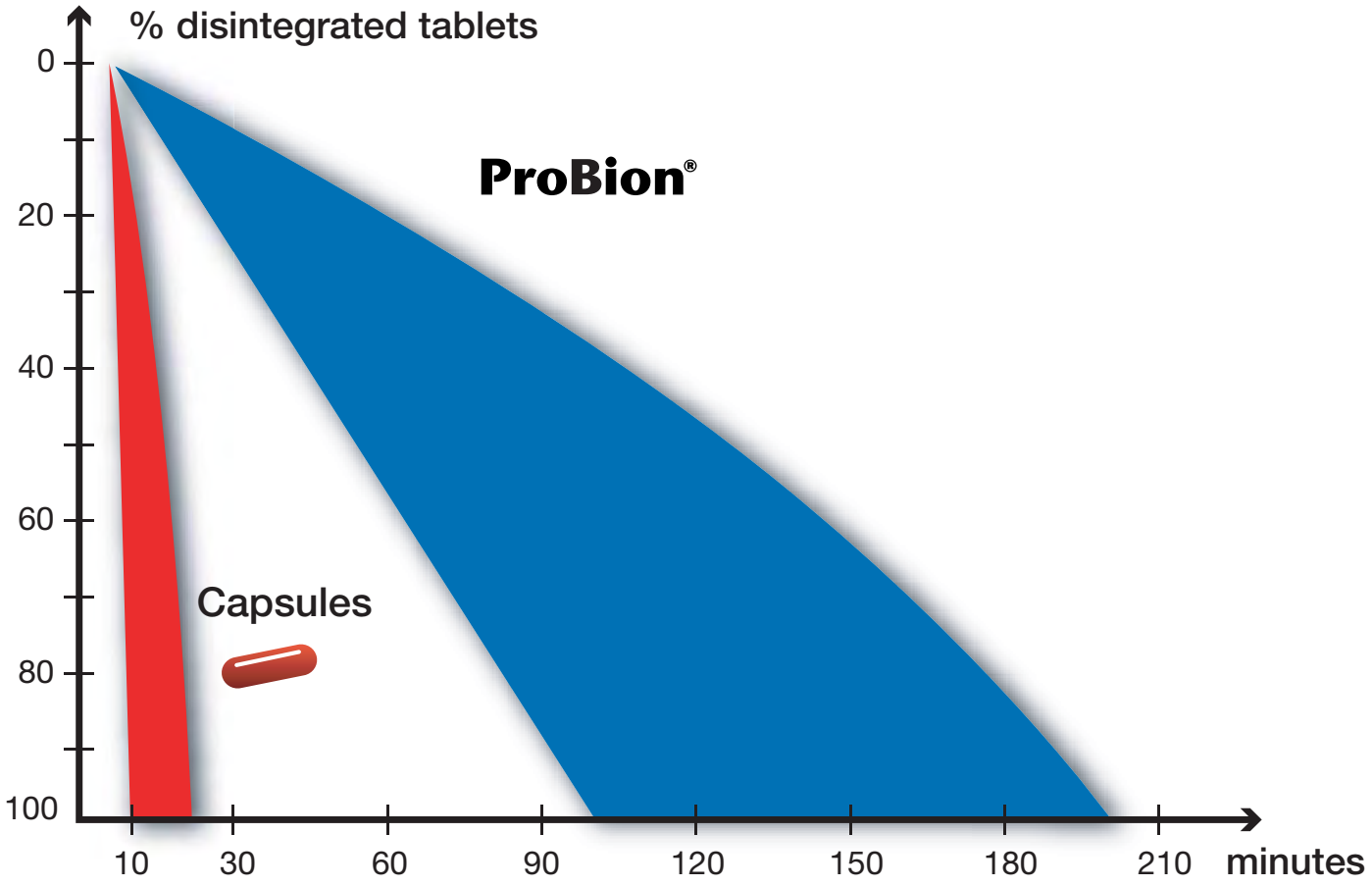

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The active Ingredient in a tablet is exposed to...

- Compression forces
- Splint forces
- Heat during processing
- residual moisture during storage

Conclusion:
Conventional tablets are not the most optimal vehicle for probiotics!

Some hard shell capsules are made from materials other than gelatin...

- Starch hydrolysate: "Capill“
- Hydroxypropyl methyl cellulose ("Vegicaps")
- Pullulan

Hard Gelatine Capsules: 14-16%!

Vegicaps preferred for probiotics due to lower moisture content: 6%!
but still hazardeous water content!

Packaging of capsules

Gastight container with desiccants is needed

Nota Bene!
capsules have to remain their initial moisture, to avoid brittleness!

Nota Bene!
If Blisters are used: gastight foils on both sides have to be used

Conclusion: due to moisture content capsules are not the most optimal vehicle for probiotics!

Probiotic tablets requires specific conditions to achieve sufficient stability.

Lowest possible compression force to achieve desired hardness and friability.

Low splint forces and heat development.

Low a_w exipients.

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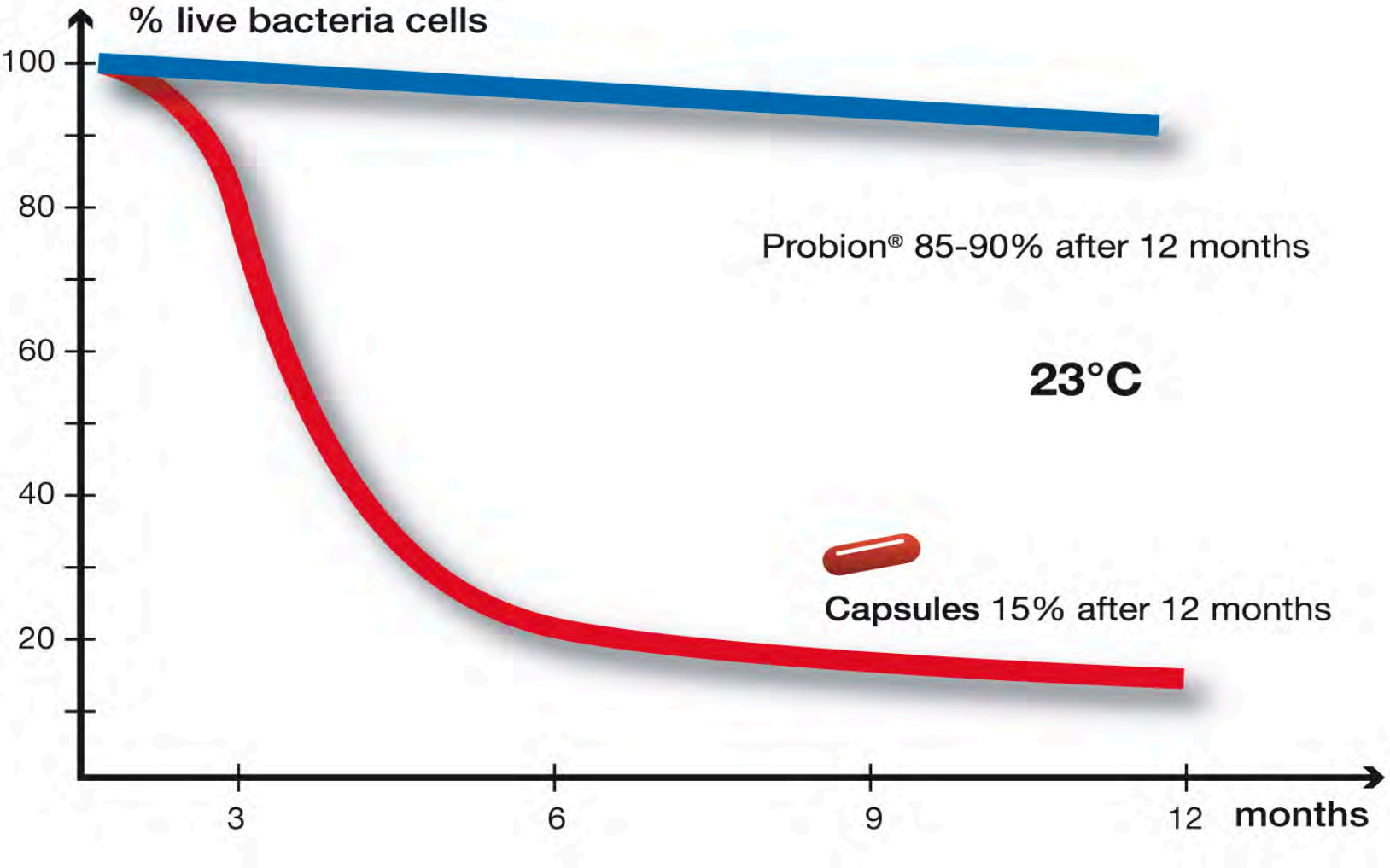
Viability of bacteria in

ProBion® - the smart tablet



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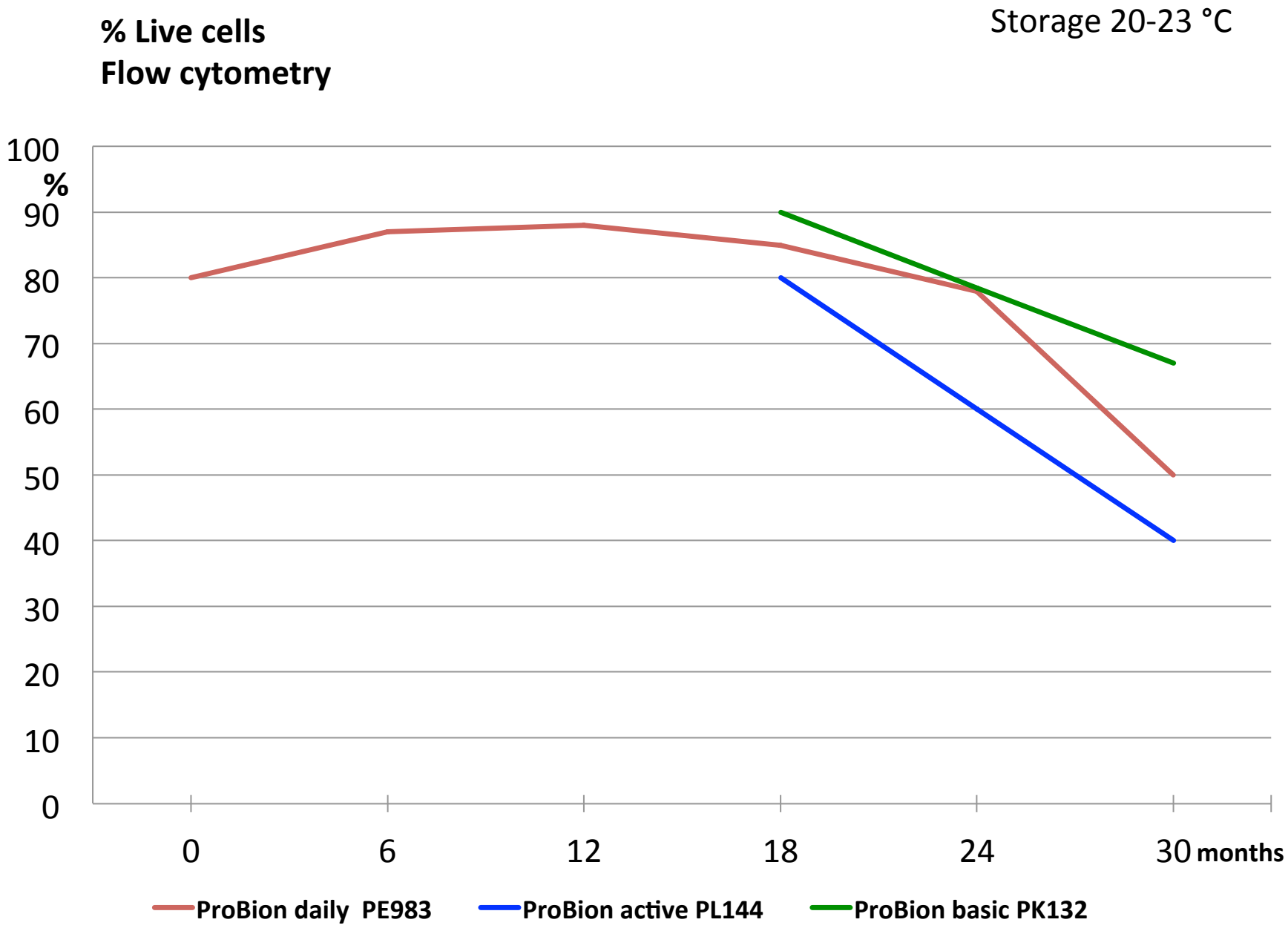
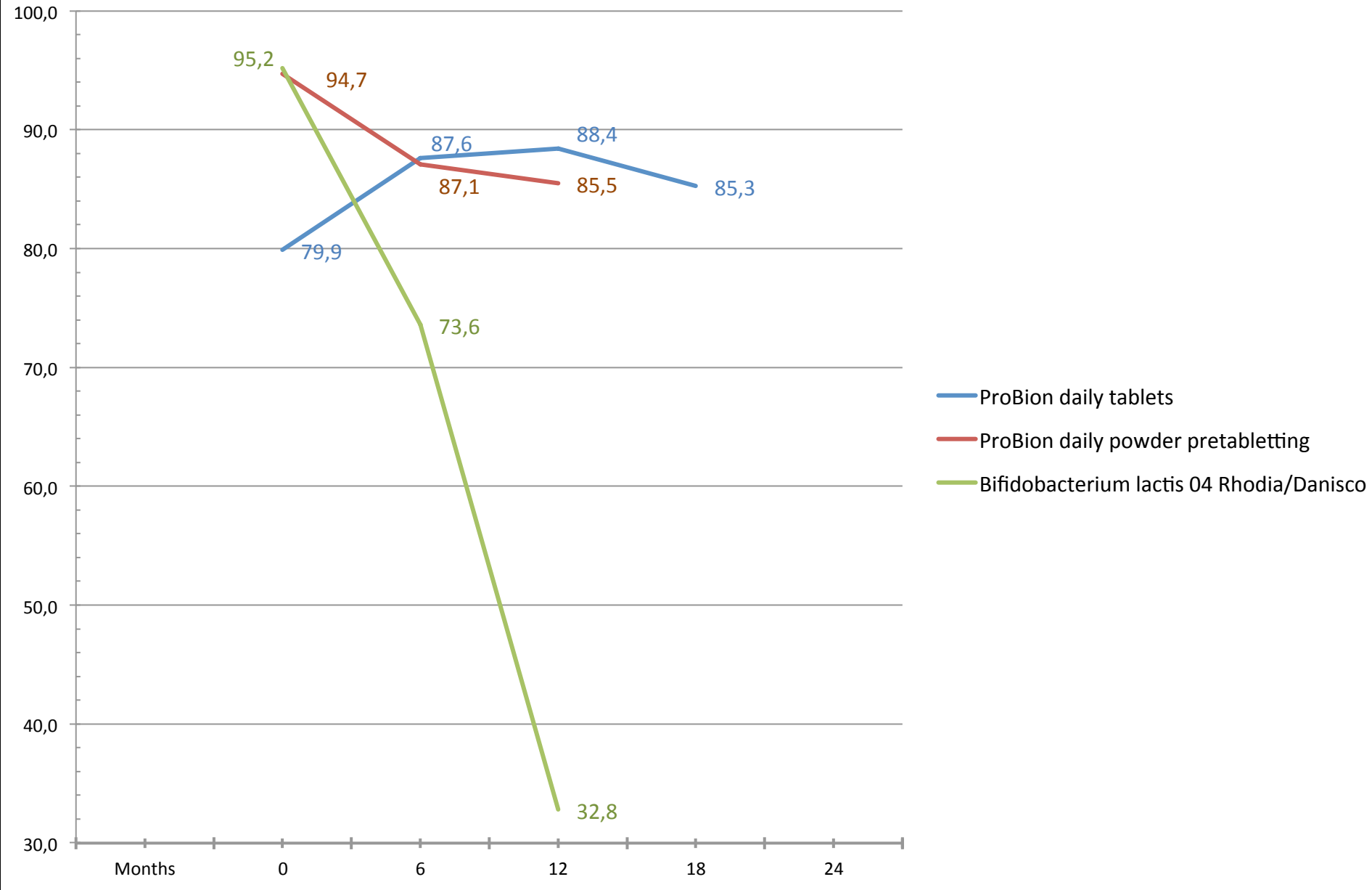

% Live cells
Flow cytometry
Storage 20-23 °C
100
%
90
80
70
60
50
40
30
20
10
0
0
6
12
18
24
30 months
ProBion daily PE983
ProBion active PL144
ProBion basic PK132

% Live cells
Flow cytometry

Storage 20-23 °C



ProBion® - the smart tablet

- ***Rawmaterials***

- **Prebiotics - Inulin**

  Inulin stimulates the growth and activity of the host's own beneficial bacteria.

- **Xanthan**

  A mucus-forming agent that forms a sheltering cover around the bacteria.
  Important for regulating the disintegration profile of the tablet.

- **Magnesium stearate**

  Used as a lubricant during production.

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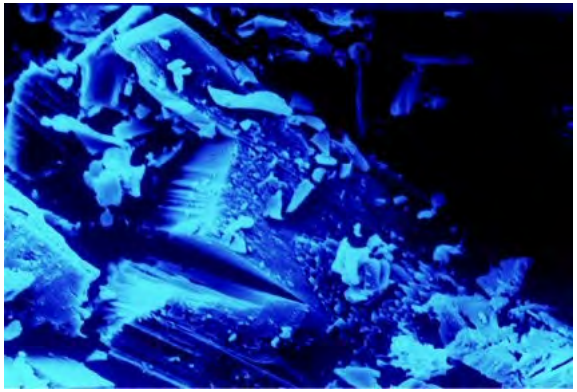
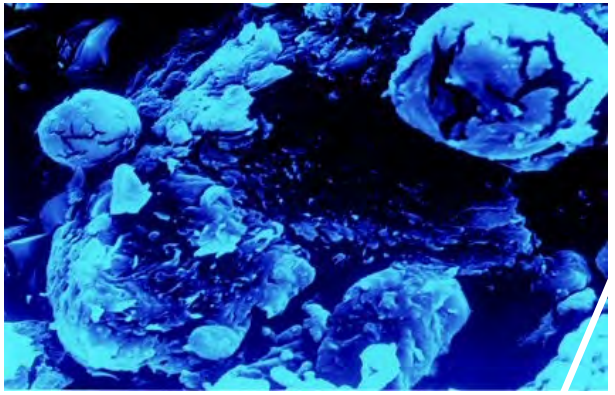
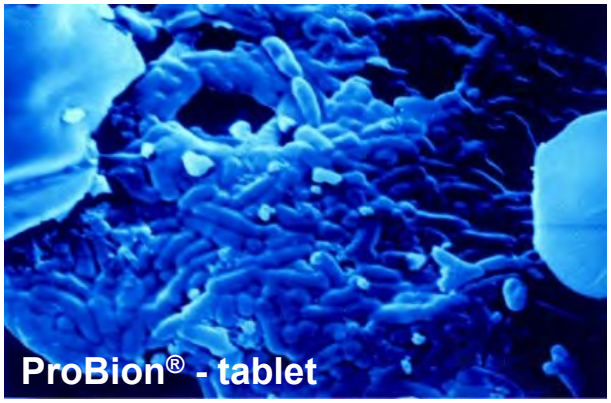
ProBion® - the smart tablet



A tablet produced with high compression forces. No space for bacteria to be sheltered or protected.



Tablet produced according to the ProBion® technique. Space for bacteria to be sheltered or protected.



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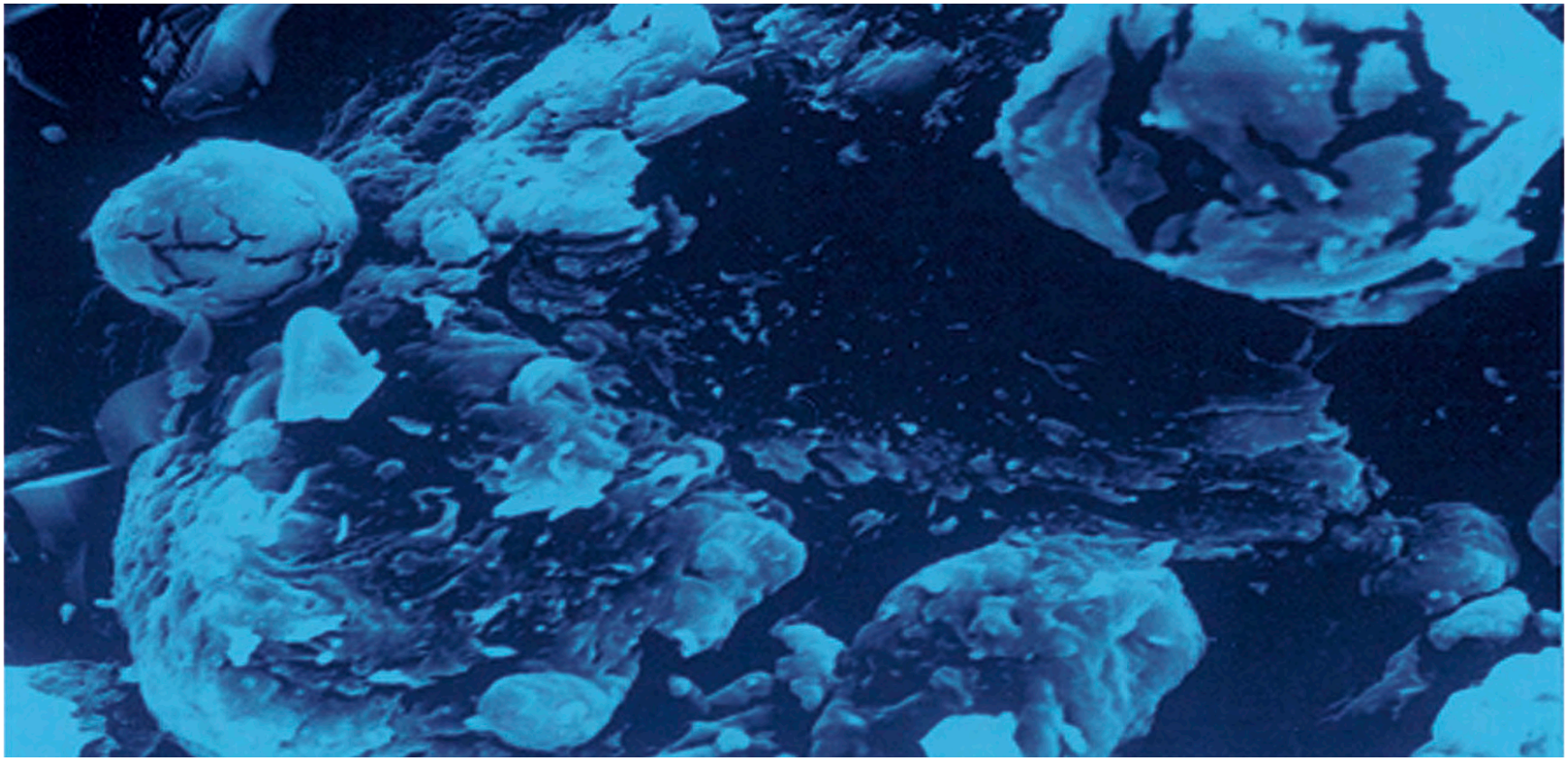
Inside the **ProBion®** - the smart tablet globules with inulin and xanthan.



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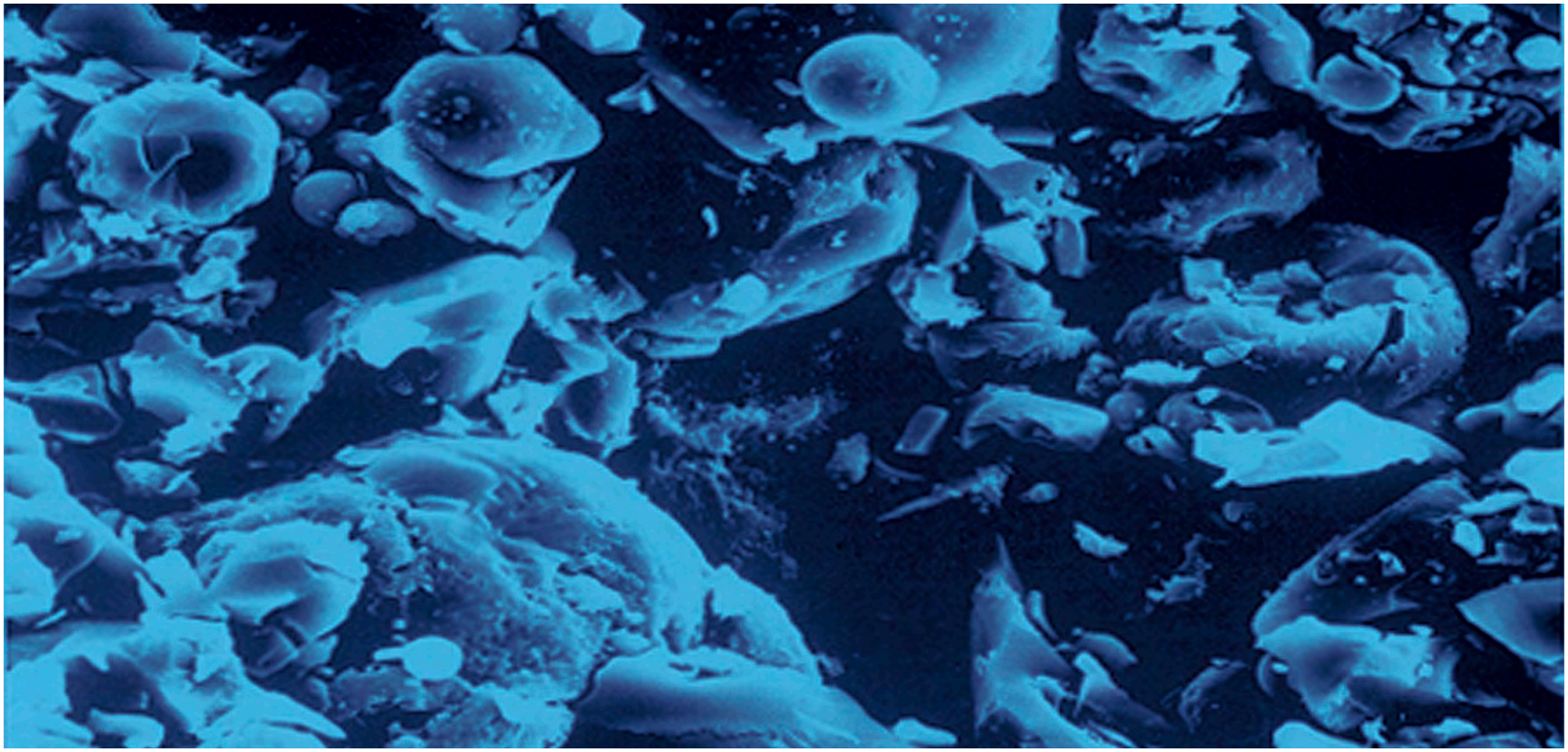

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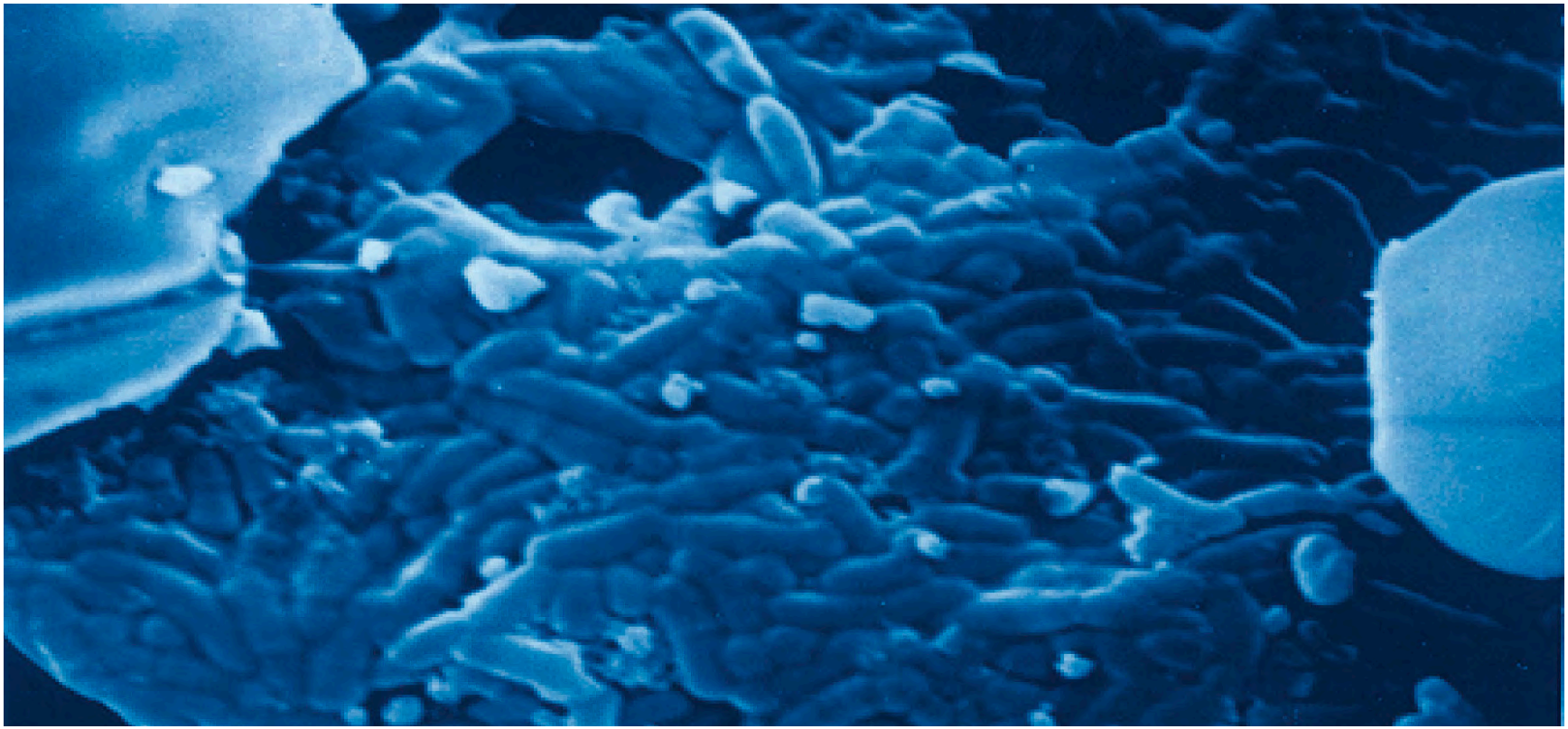
Inside the **ProBion®** - the smart tablet with bacteria inside the globules.



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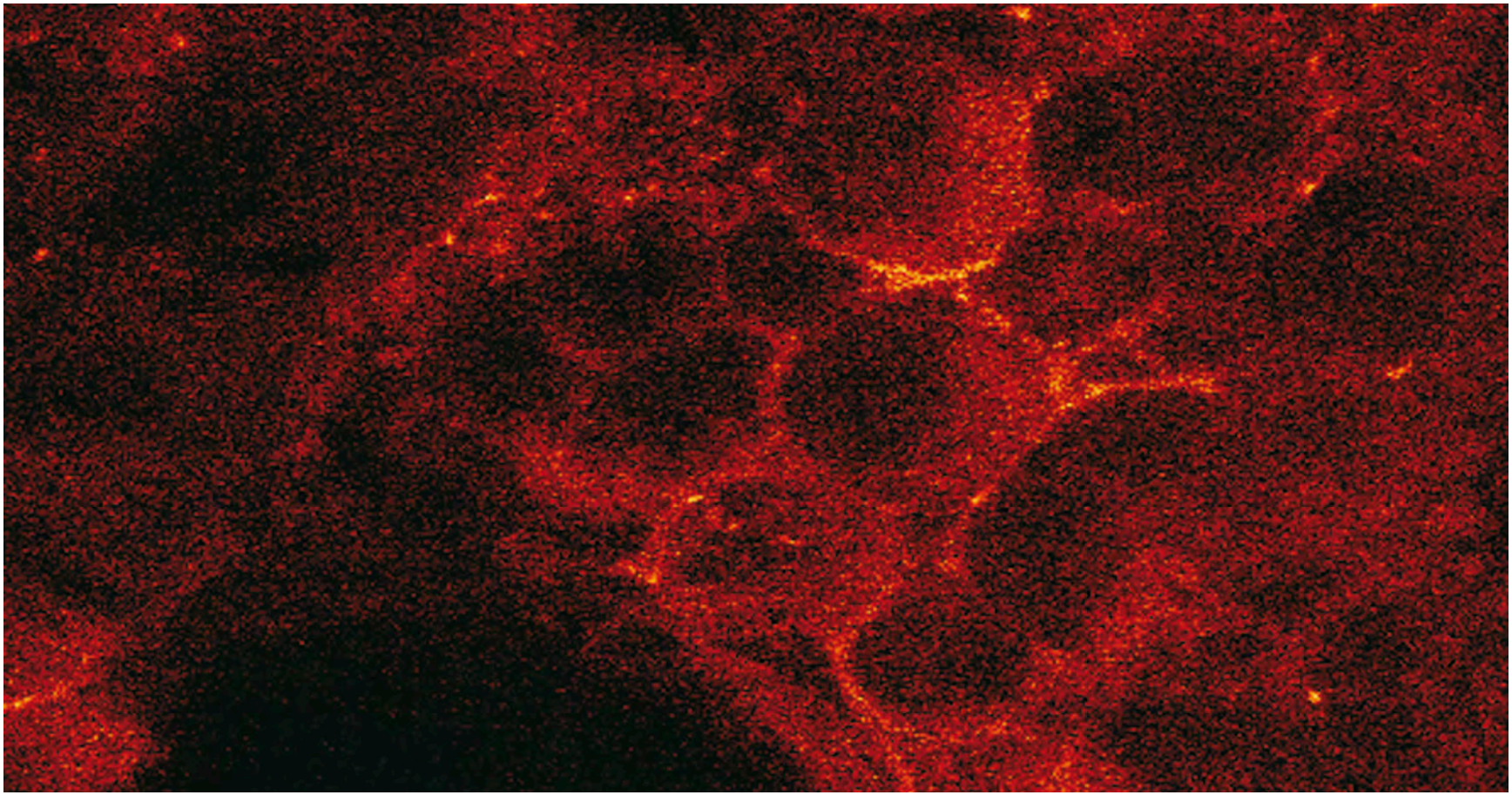
Confocal Laser picture inside **ProBion®** - the smart tablet with globules.



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80% VIGOROUS BACTERIA LEFT AFTER 12 MONTHS
ProBion®
PROLONGED
SHELF-LIFE

Conclusion: ProBion technique is the most
optimal vehicle for probiotics!

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