



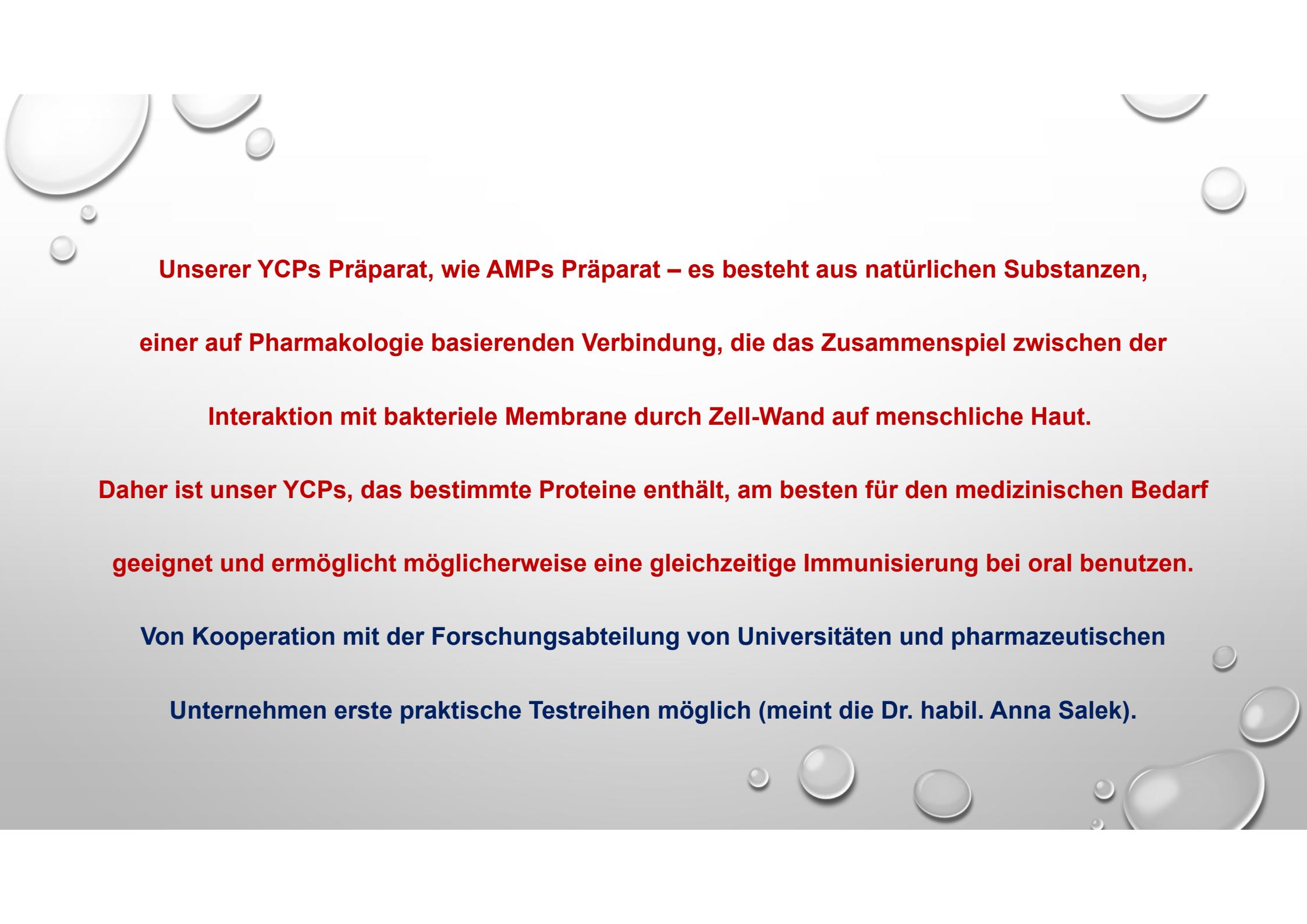
YEAST Complex Proteins (YCPs)

Ein Antimicrobial Präparat (AMPs)
gegen pathogenische Mikroorganismen

Dr. habil. Anna Salek

Auf Basis eines erprobten Tiermedikamentes lässt sich schnell ein humanmedizinischer Wirkstoff gegen Mikroorganismen entwickeln (sagt Dr. habil. Anna Salek).

Einen vielversprechenden Ansatz zur Entwicklung eines potenten Mittels gegen unterschiedliche Mikroorganismen bieten Erfahrungen aus der Tiermedizin, wo bereits vor über 20 Jahren mit Rota- und Coronaviren infizierte Ferkel und auch mit Dermatophytien (wie *Candida albicans*) bei Pferde erfolgreich behandelt werden konnten.

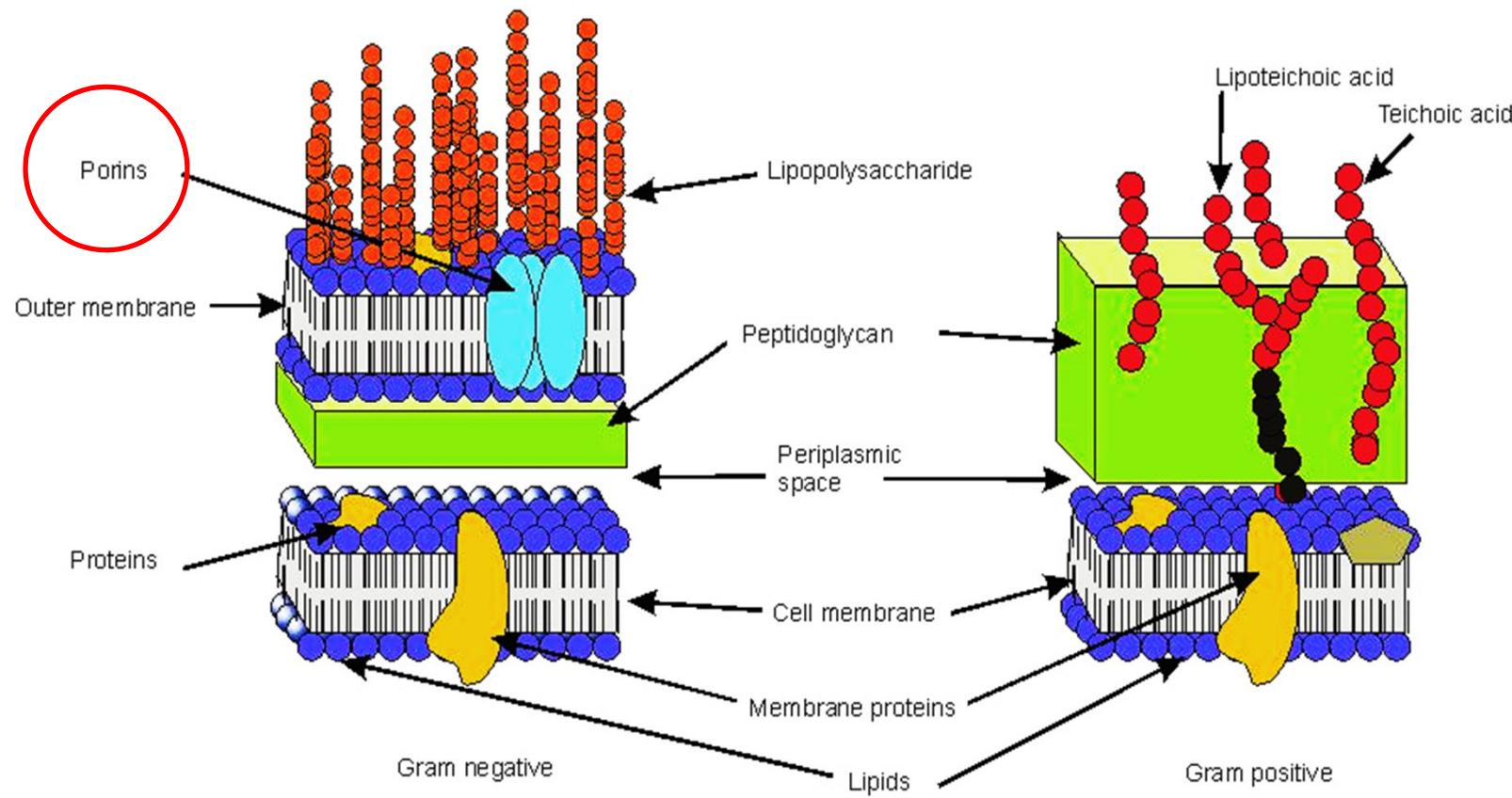


**Unserer YCPs Präparat, wie AMPs Präparat – es besteht aus natürlichen Substanzen,
einer auf Pharmakologie basierenden Verbindung, die das Zusammenspiel zwischen der
Interaktion mit bakteriele Membrane durch Zell-Wand auf menschliche Haut.**

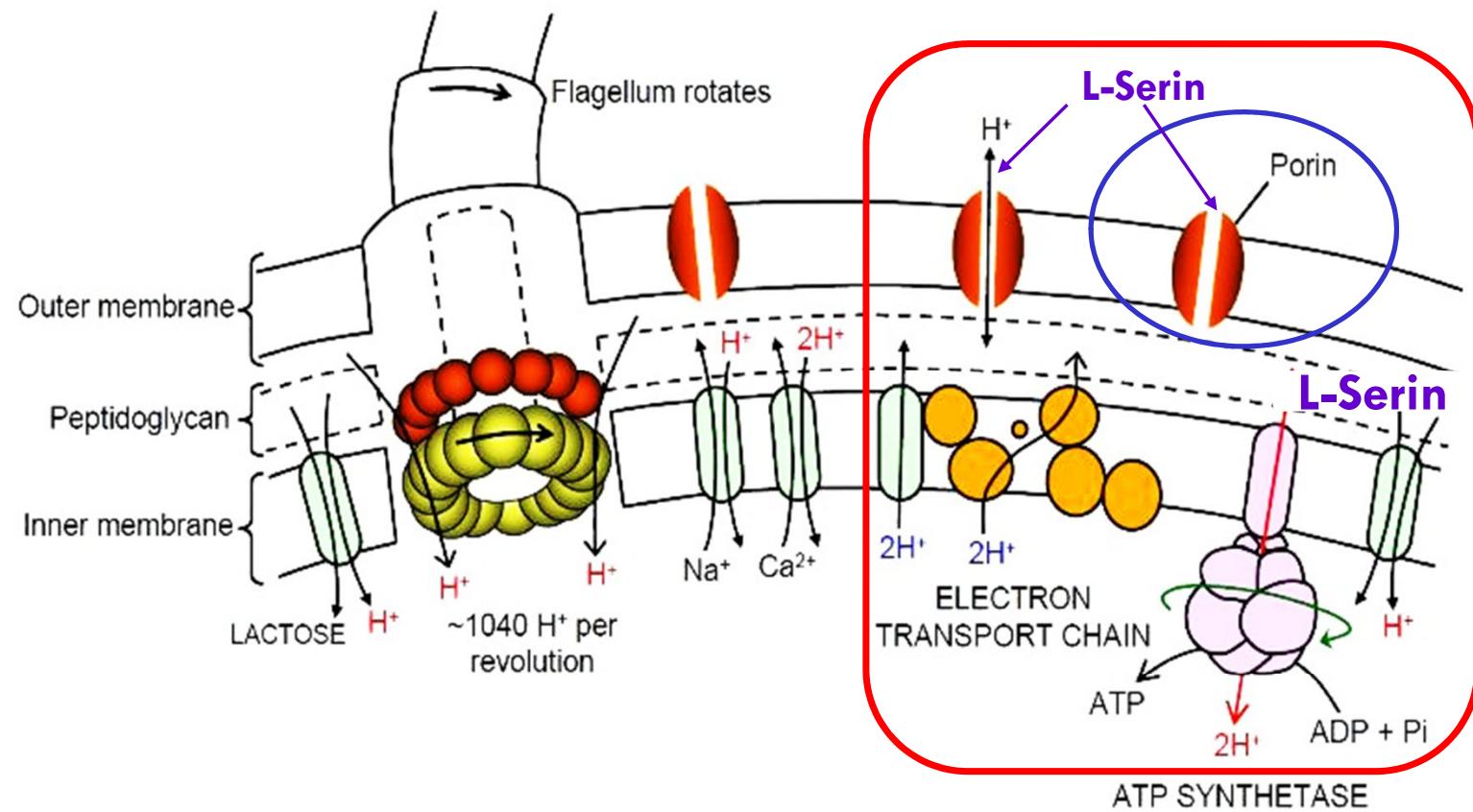
**Daher ist unser YCPs, das bestimmte Proteine enthält, am besten für den medizinischen Bedarf
geeignet und ermöglicht möglicherweise eine gleichzeitige Immunisierung bei oral benutzen.**

**Von Kooperation mit der Forschungsabteilung von Universitäten und pharmazeutischen
Unternehmen erste praktische Testreihen möglich (meint die Dr. habil. Anna Salek).**

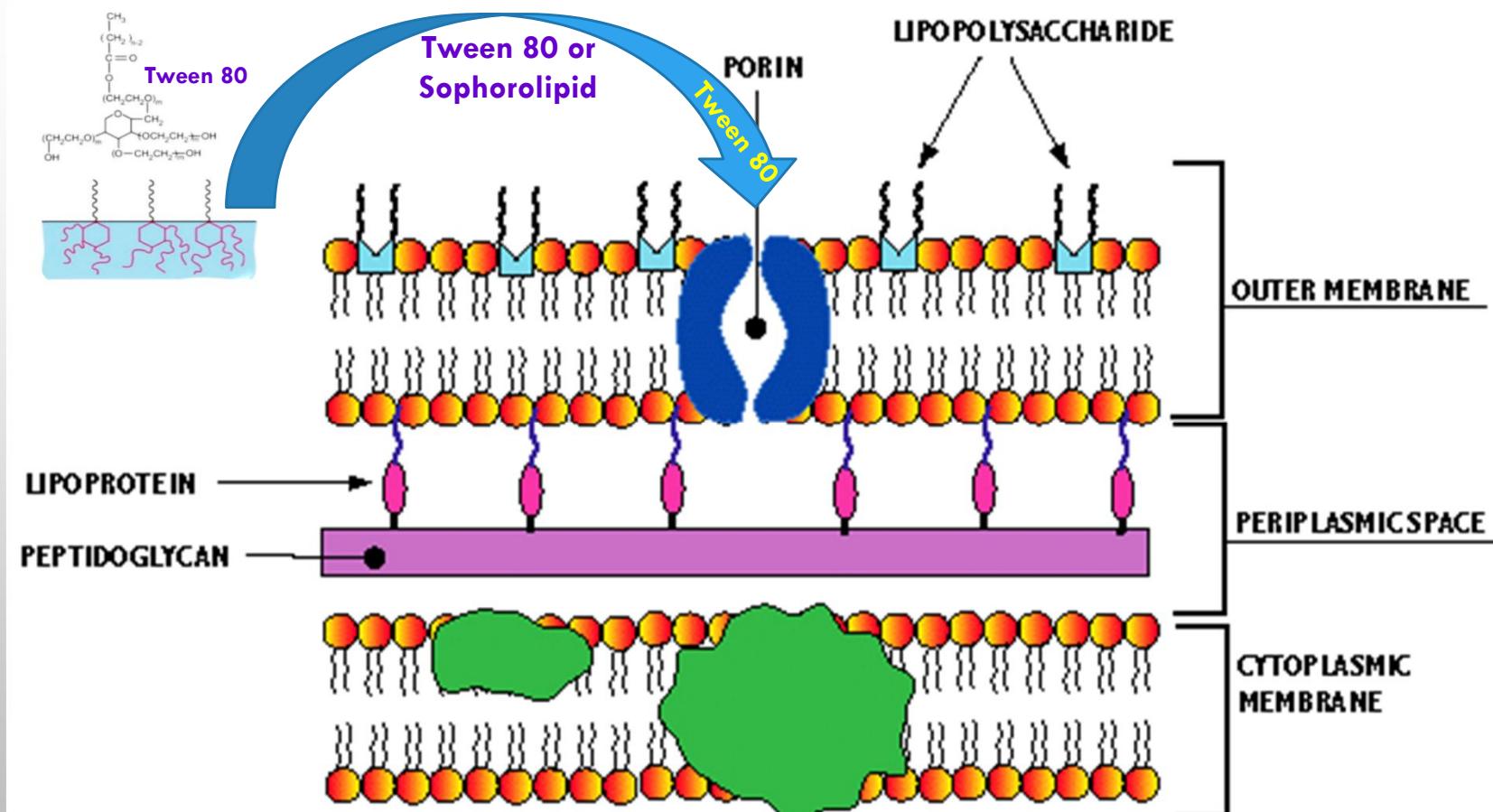
STRUKTUR DER MEMBRANEN VON GRAM-NEGATIVEN UND GRAM-POSITIVEN BAKTERIEN



MEMBRAN VON GRAM-NEGATIVEN BAKTERIEN: BEDEUTUNG DES PORINS

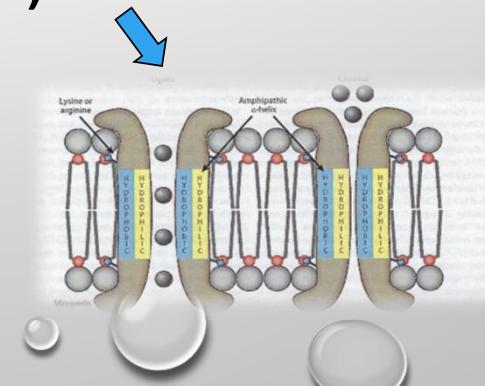


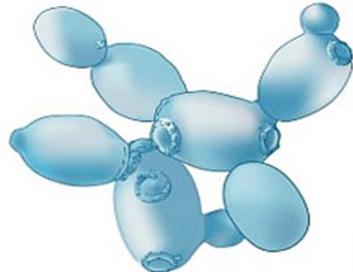
Membran von Gram-negativen Bakterien: Bedeutung des Porins



Mechanismus der Funktion YCPs

Diese Struktur konnte sowohl durch unsere Präparat als auch durch kompetente Substanzen wie Proteasen und biologische Substanzen aus unseren YCPs zerstört werden, die teilweise die Phospholipid-Doppelschicht der Bakterien- oder Hefemembran (Envelope) zerstörten.

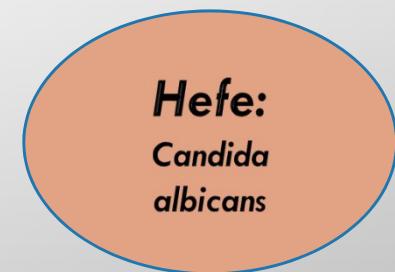




Yeast Antimicrobial Proteins



Bacteria:
Legionella pneumophila,
Enterobacteriaceae,

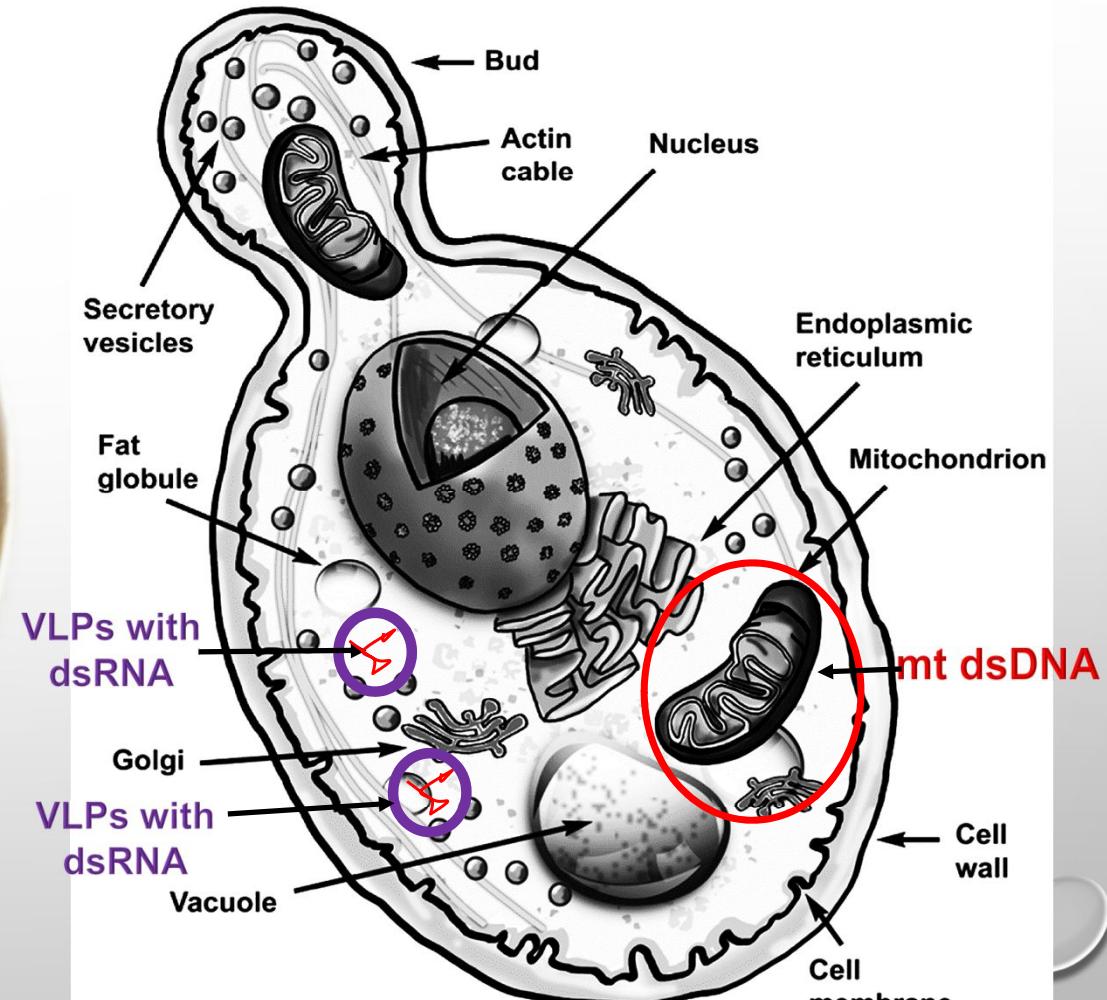


KILLER PHENOMENON – SPECIFIC SECRETORY SYSTEM

The killer phenomenon has been reported for strains of the genera *Saccharomyces*, *Kluyveromyces*, *Hansenula* (or *Pichia*), *Hanseniaspora*, *Williopsis*, *Candida*, *Torulopsis*, *Debaromyces*, *Cryptococcus* and *Ustilago*. The above-mentioned yeasts produce toxins which act against sensitive strains of the same or closely related species as well as against unrelated microorganisms, including pathogenic yeasts.

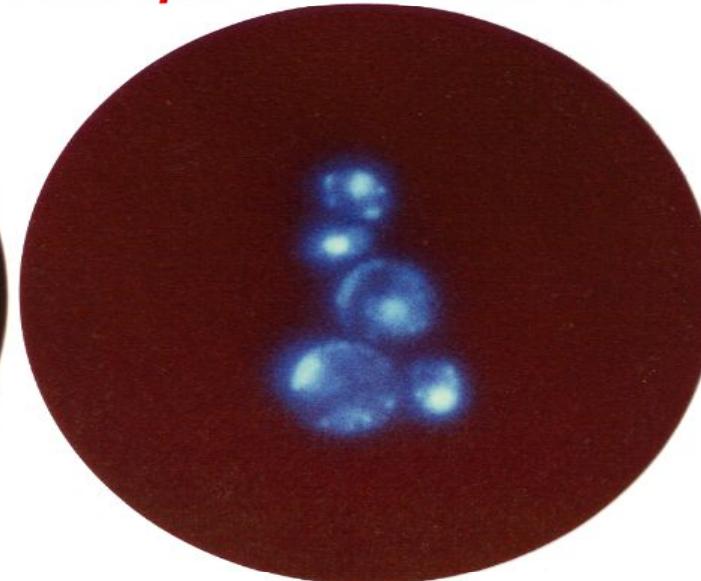
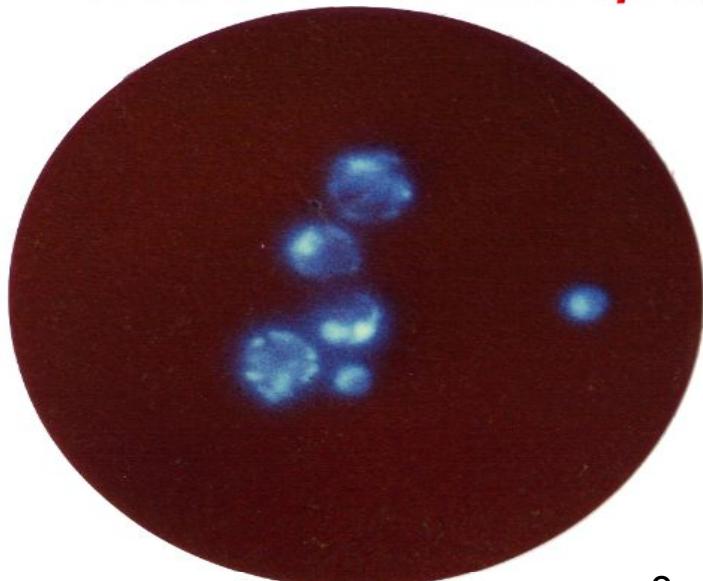


Williopsis mrakii AS-15



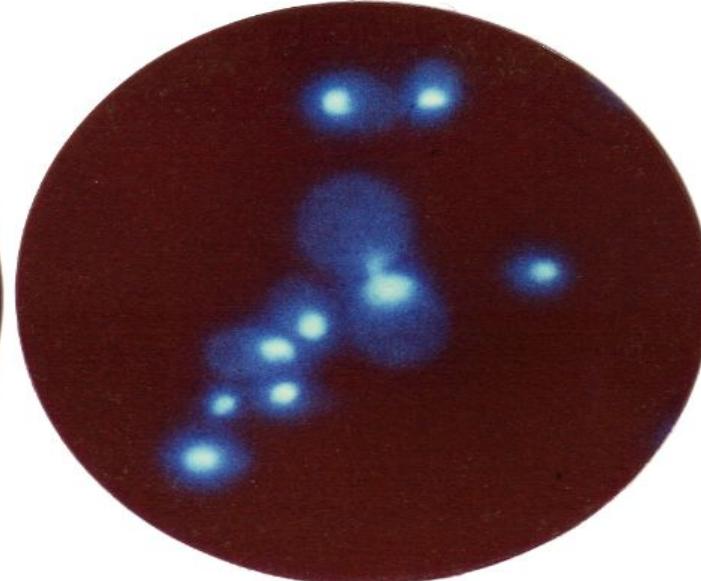
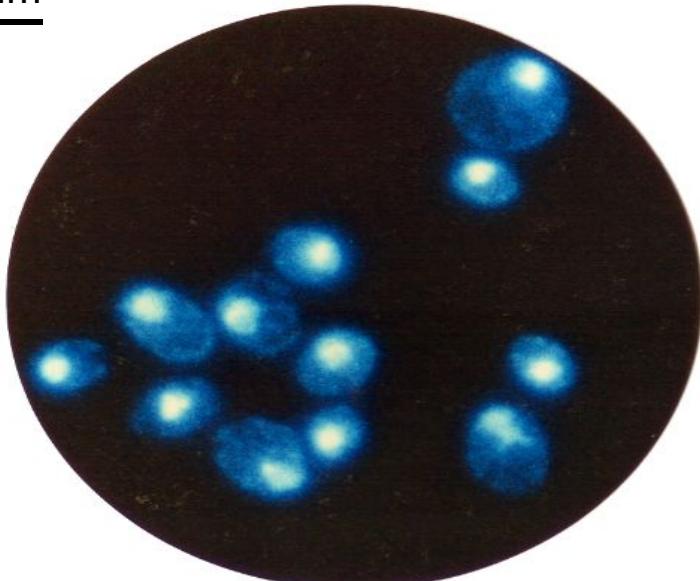
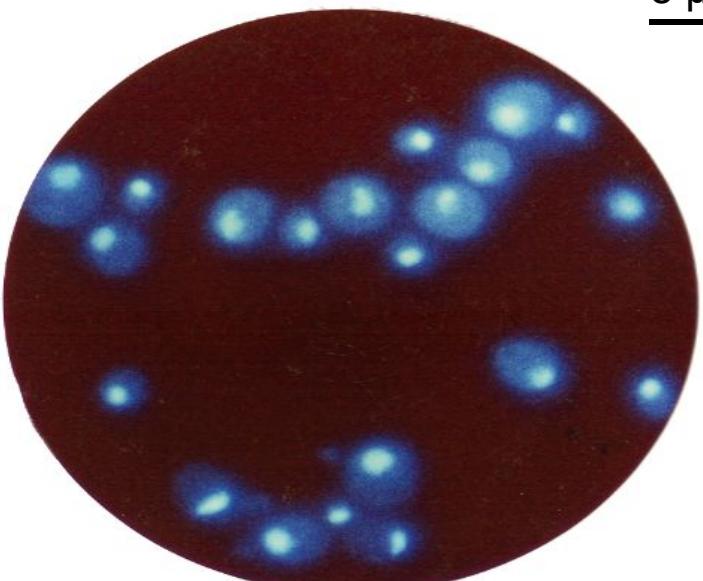
Fluorescence micrographs of DAPI-stained yeast Williopsis mrakii AS-15

rho⁺

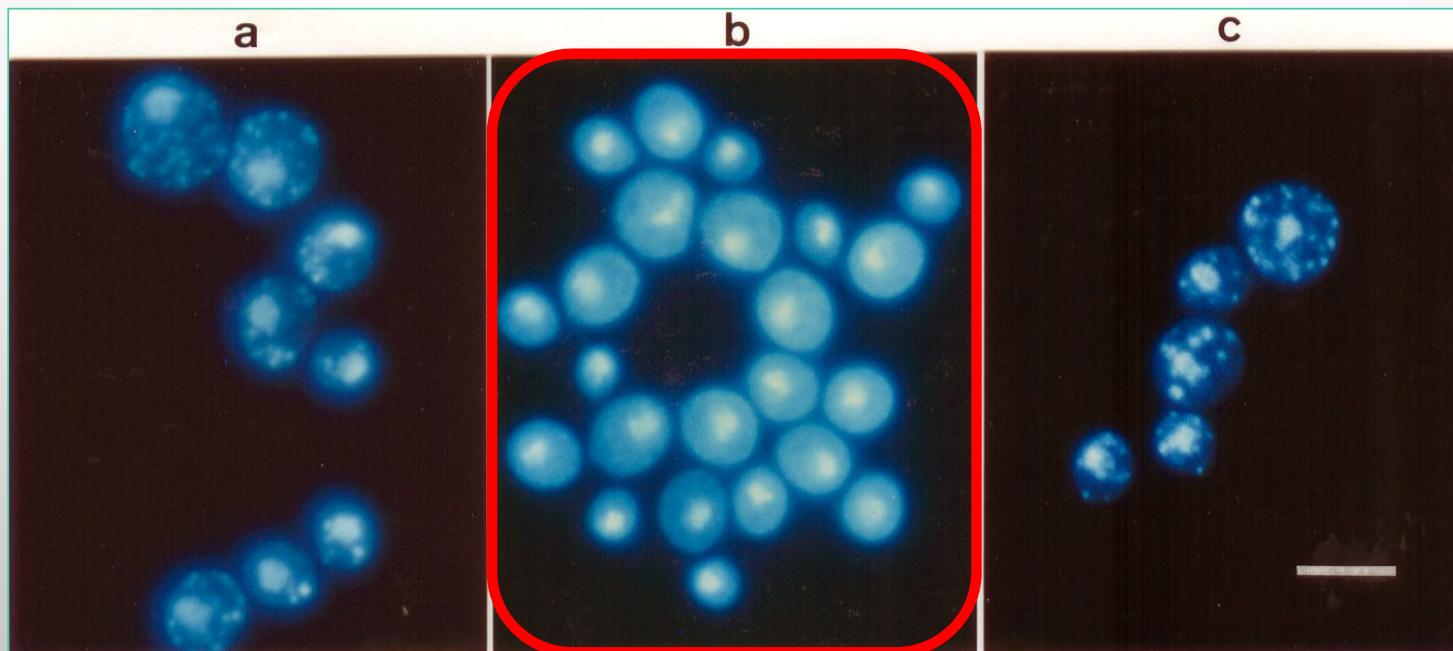


8 μm

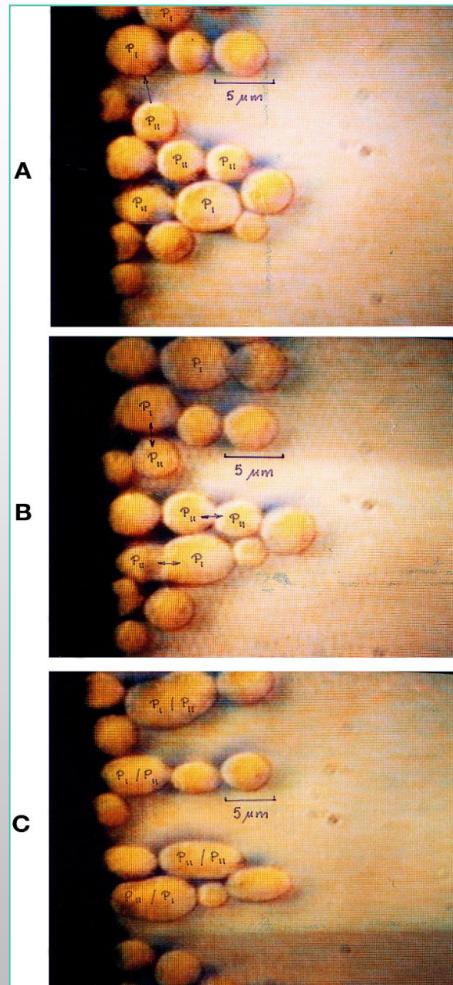
rho⁻



**Fluorescence micrographs of DAPI-stained
Williopsis mrakii AS-15 yeast (spheroplasts)**



Electrofusion of *W. mrakii* protoplast and isolation of „gigant“ cells



Electrofusion

A. Dielectrophoresis

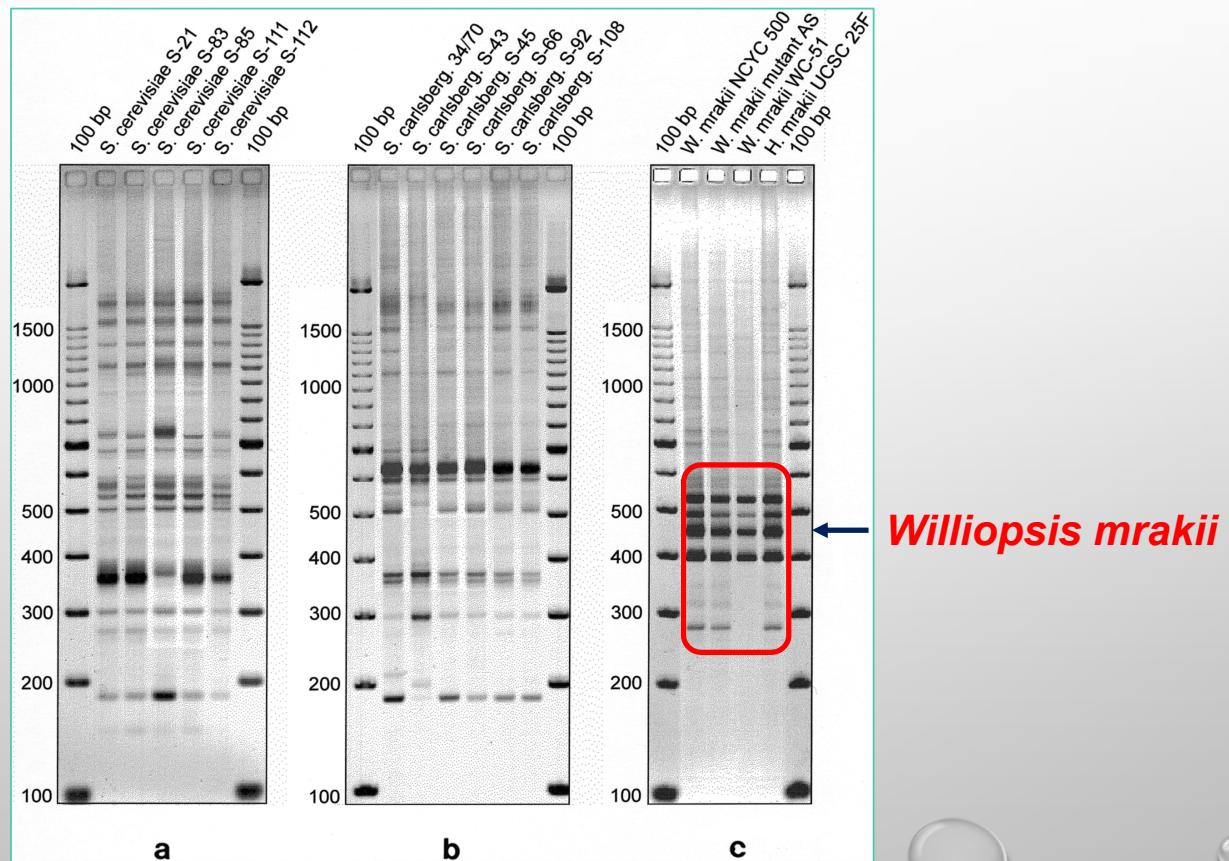
Electrofusion

B. Disturbance of phospholipides

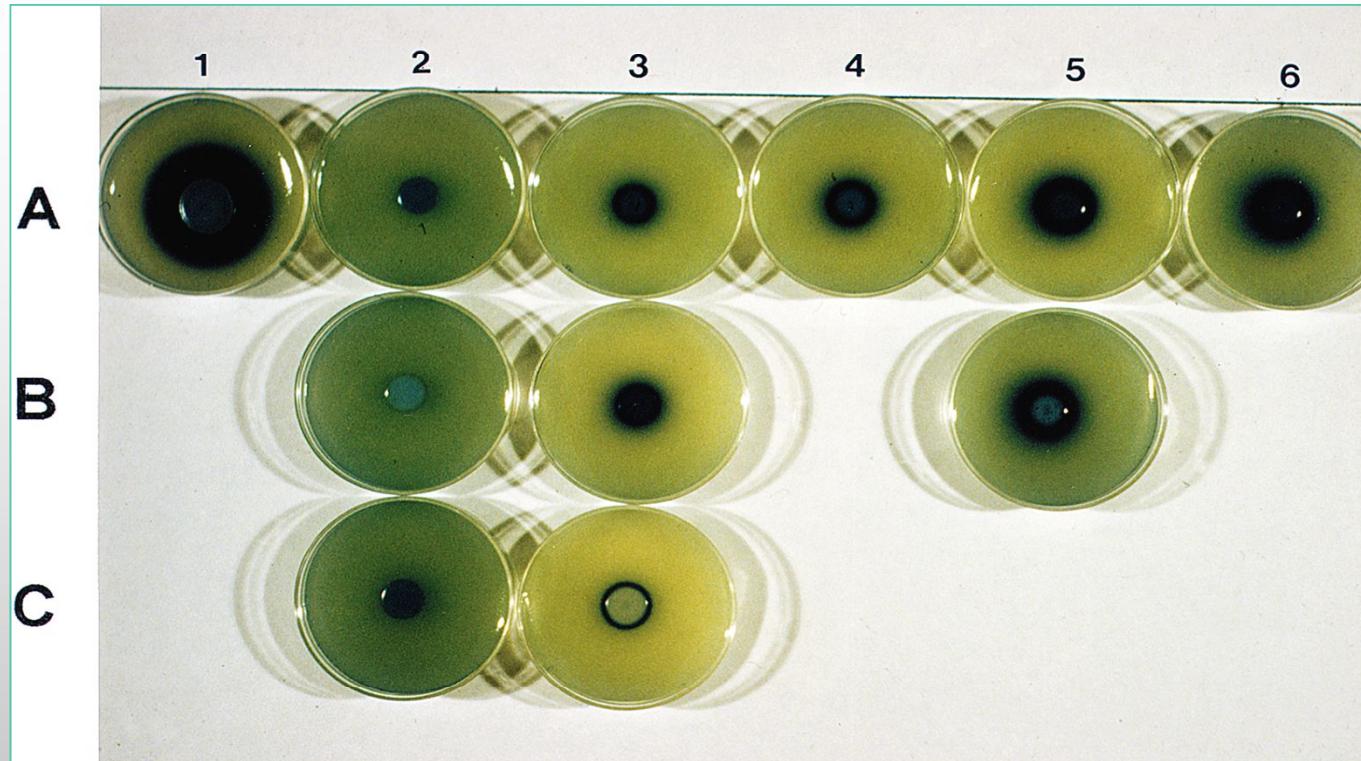
Electrofusion

C. Fusion of cytoplasms & after that isolation „gigant“ cells

IL-PCR-fingerprints of *S. cerevisiae* and *Williopsis mrakii* generated by IL-primer GR

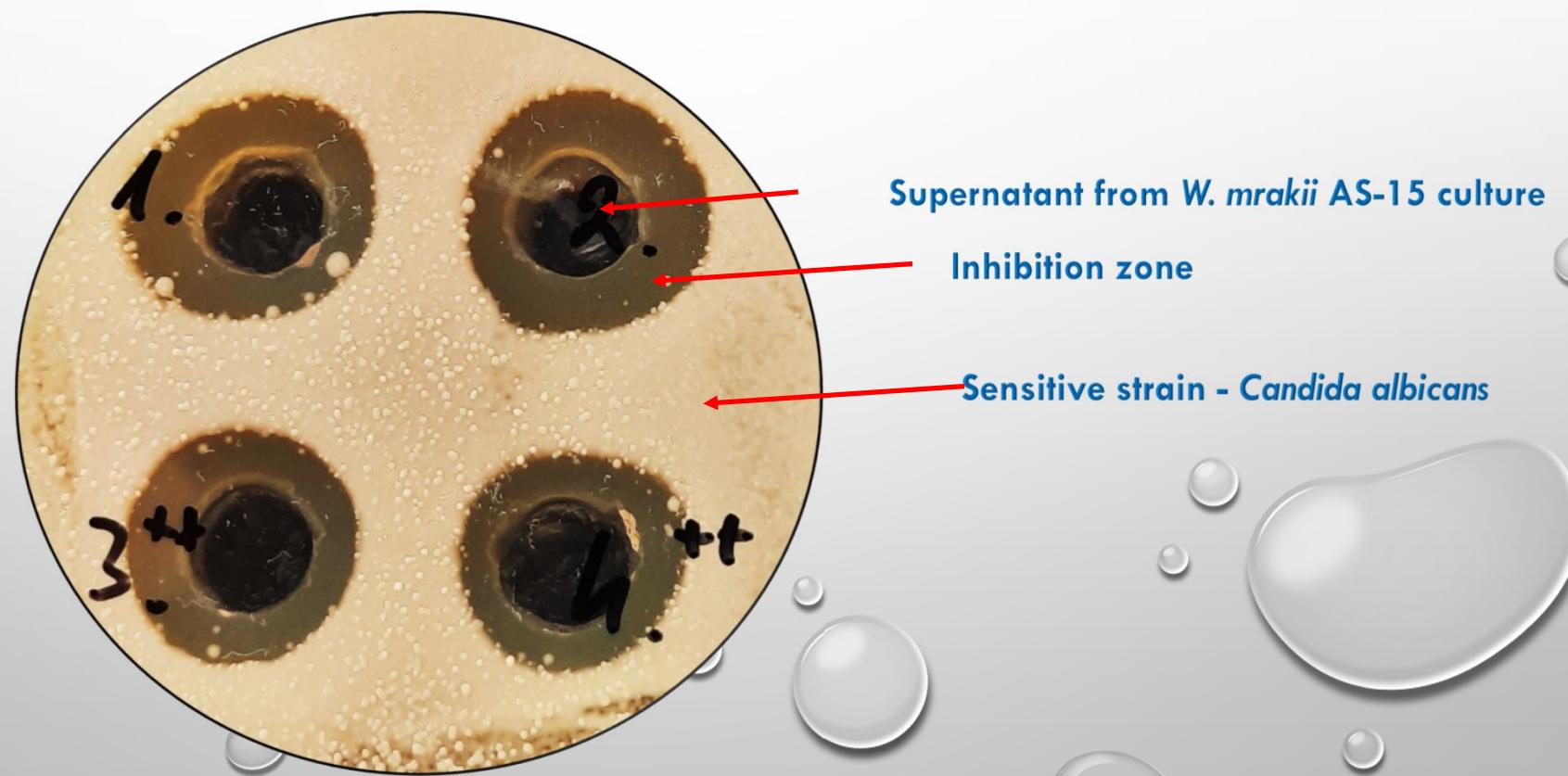


Killer activity assay



Petri dishes carrying assays for killer activity of best single colonies from
“gigant” cells, incl. *Williopsis mrakii* AS-15

YEAST COMPLEX PROTEINS FROM *WILLIOPSIS MRAKII* AS-15 AGAINST PATHOGENIC FUNGI



Determination of cytotoxicity of yeast complex proteins (YCPs)

Fig. 1. Toxicity of different killer toxin for EBL' cells.

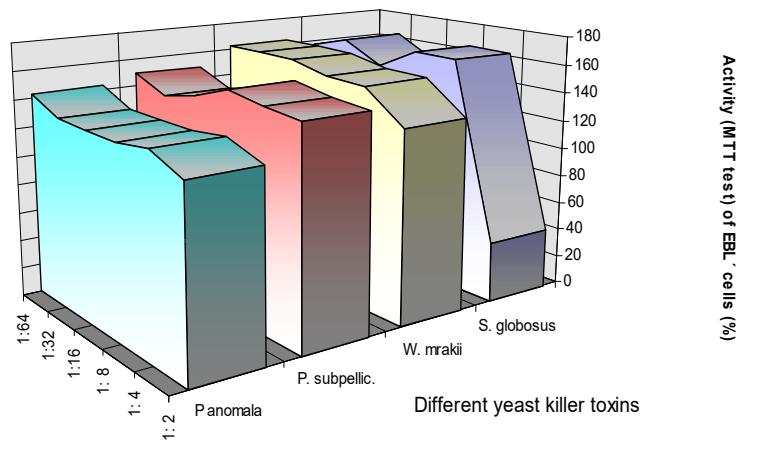


Fig. 2. Toxicity of different killer toxins for HeLa cells.

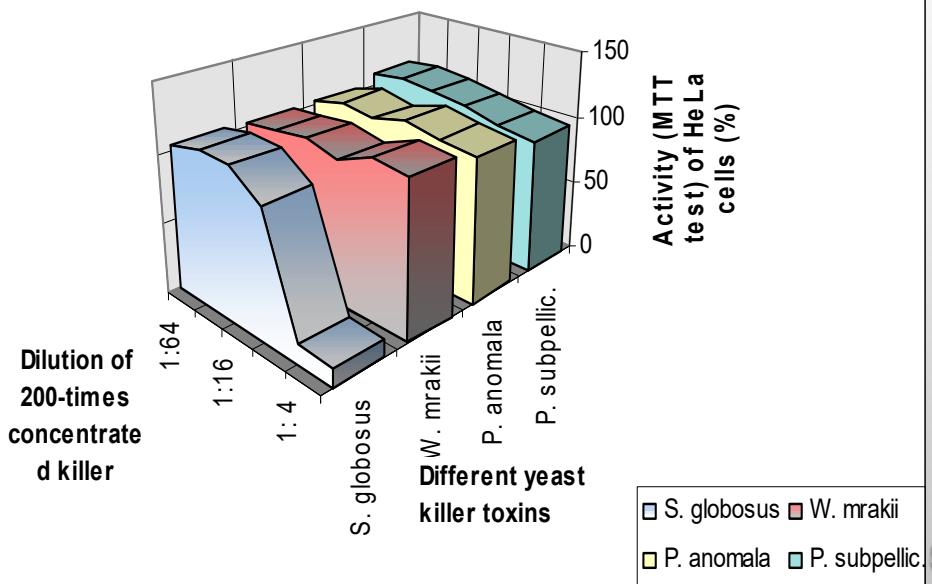


Fig. 3. Toxicity of different killer toxins for PK-15 cells.

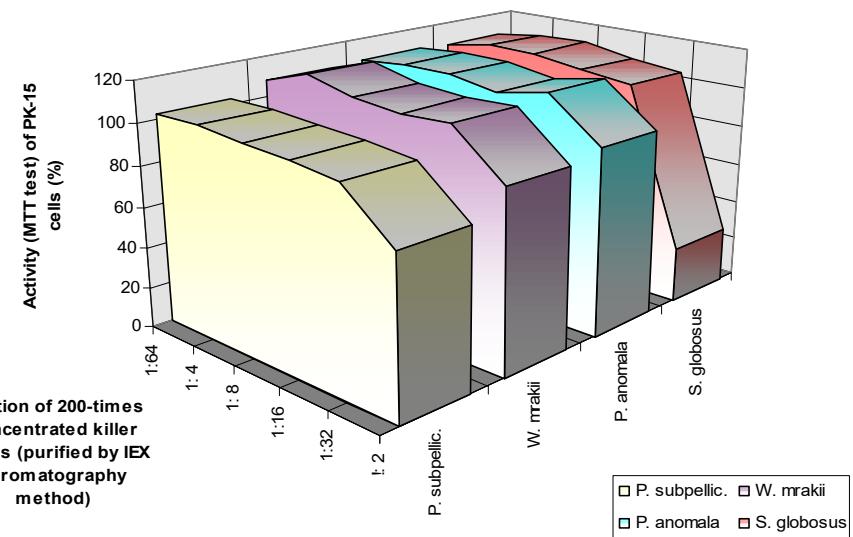


Fig. 4. Toxicity of different killer toxins for HEP-2 cells.

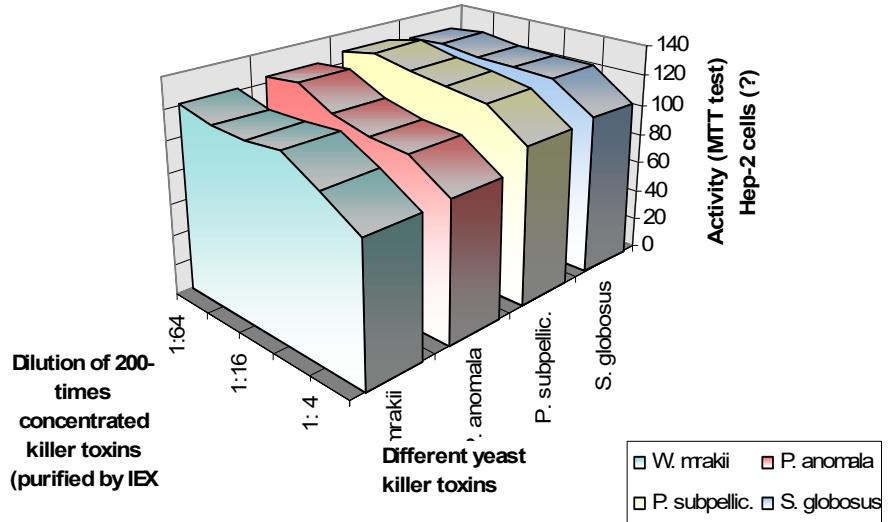


Fig. 5. Toxicity of different killer toxins for V-79 cells.

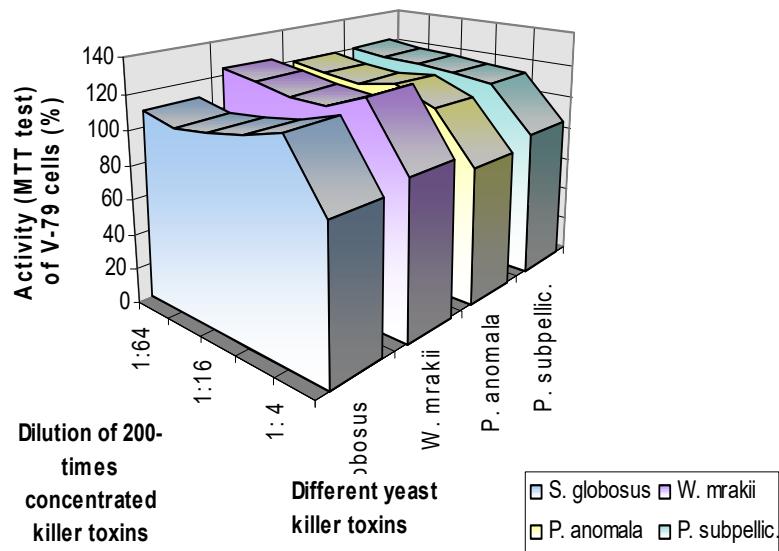


Fig. 6. Toxicity of different killer toxins for VERO cells.

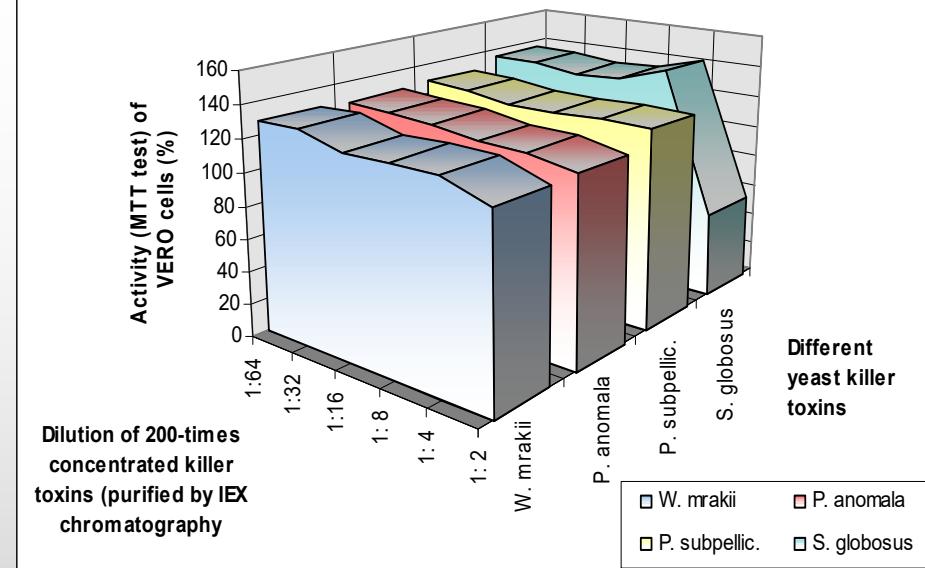


Fig. 7. Toxicity of killer toxin from *Hanseniaspora valbyensis* 13cs/6 for HEP-2 cells.

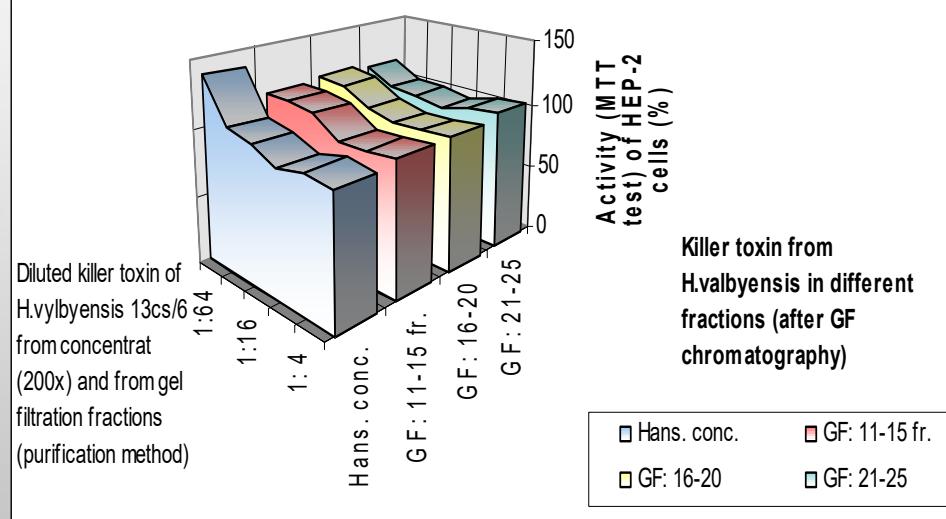


Fig. 8. Toxicity of killer toxin from *Hanseniaspora valbyensis* 13cs/6 for VERO cells.

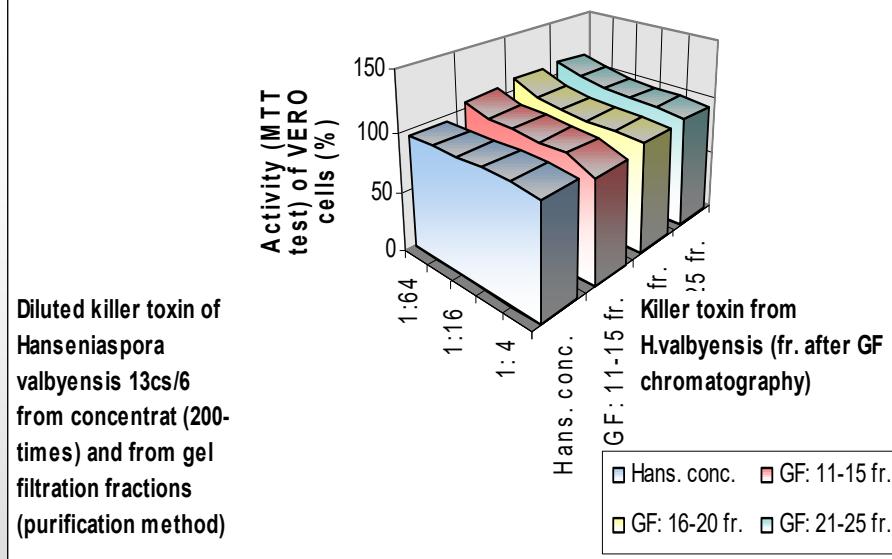


Fig. 9. Toxicity of killer toxin from Hanseniaspora valbyensis 13cs/6 for PK-15 cells.

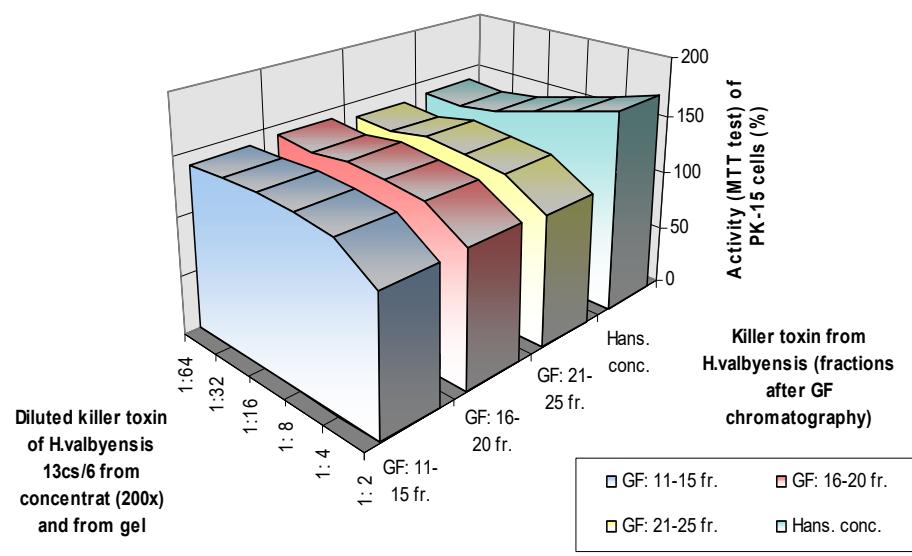
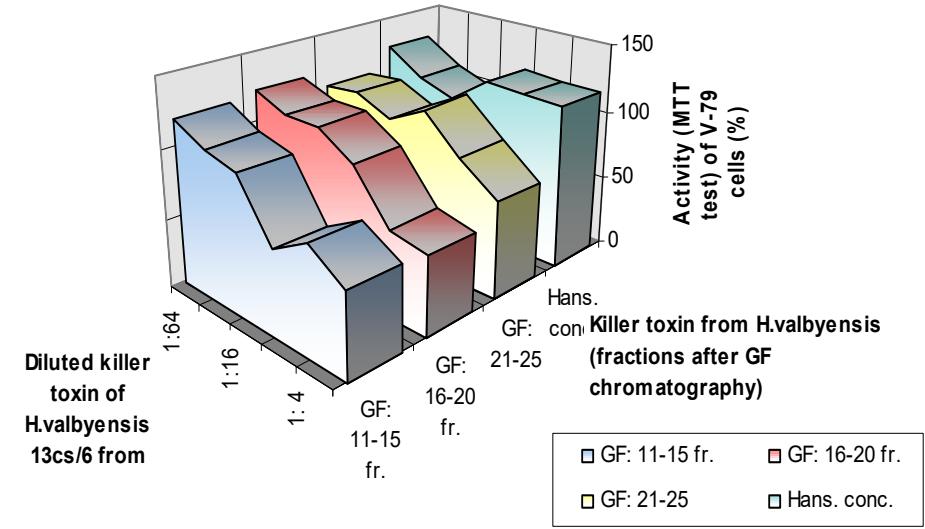


Fig. 10. Toxicity of killer toxin from Hanseniaspora valbyensis 13cs/6 for V-79 cells.



Forward veterinary test-application

**The properties of our yeast killer toxin have been tested
in veterinary praxis on 4000 small pigs
with positive results (above 80%).**

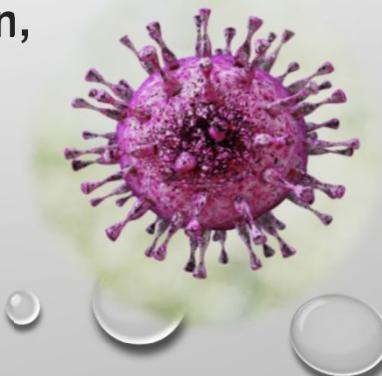
**Population of 2000 sick pigs, infected with Coronavirus
and Rotavirus, after 2-3 days got healthy
and rid of the infection.**

In the same time 2000 control group was lost.

Therapeutic oral medicine against 2019-nCOV

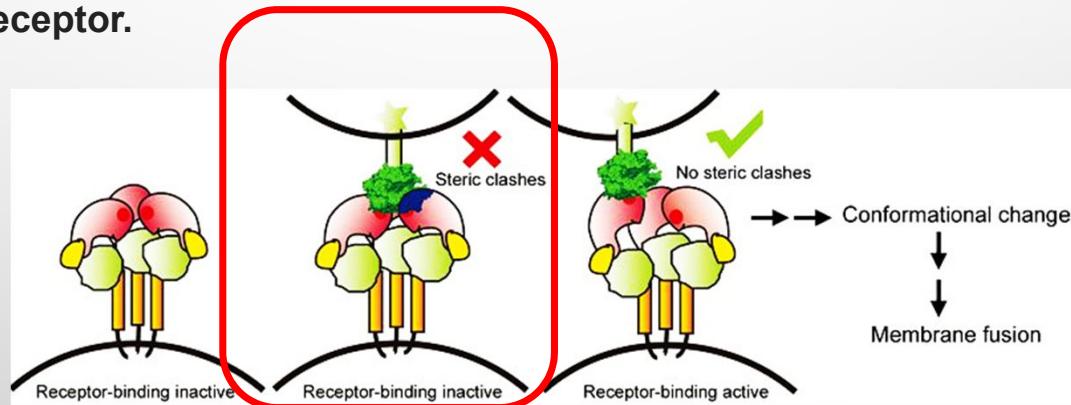
We are presenting an integrative antiviral drug methodology, which combines a systems pharmacology-based network medicine platform that quantifies the interplay between the Coronavirus and host (human macrophage) interaction and beak drug targets in the human network. The basis for that medicine are:

- Yeast killer proteins / glycoprotein,
- Specific hydrolases and effector,
- Immunomodulatory



YEAST COMPLEX PROTEINS

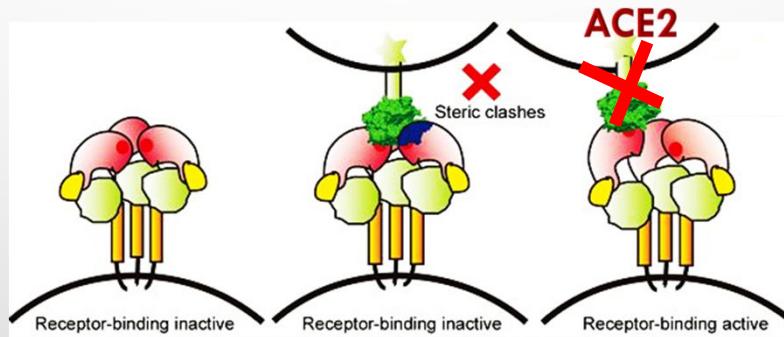
The protein, e.g. yeast killer glycoprotein, that functionally associate with Coronavirus (COVID-19) infection (i.e. with spike or envelope) and has localized in the corresponding subnetwork within the comprehensive human receptor.



The basis of this mechanism is the specific binding of the corresponding receptors from killer glycoprotein together with receptors of glycoprotein with high-mannose-content glycans (RBDs) on S glycoprotein in spike of Coronavirus. **Killer toxin make structural changes in viral RBDs.**

YEAST COMPLEX PROTEINS

The protein of yeast killer functionally associate with Coronavirus (COVID-19) infection, i.e. with spike or envelope and has localized in the corresponding subnetwork within the comprehensive human receptor (ACE2).



Yeast killer proteins make structural changes in viral receptors and in human receptors.

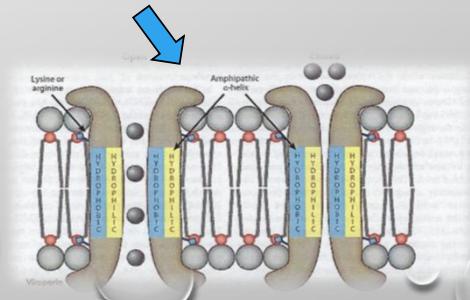
It is neutralisation effect the spike and ACE2 receptors.

YEAST COMPLEX PROTEINS

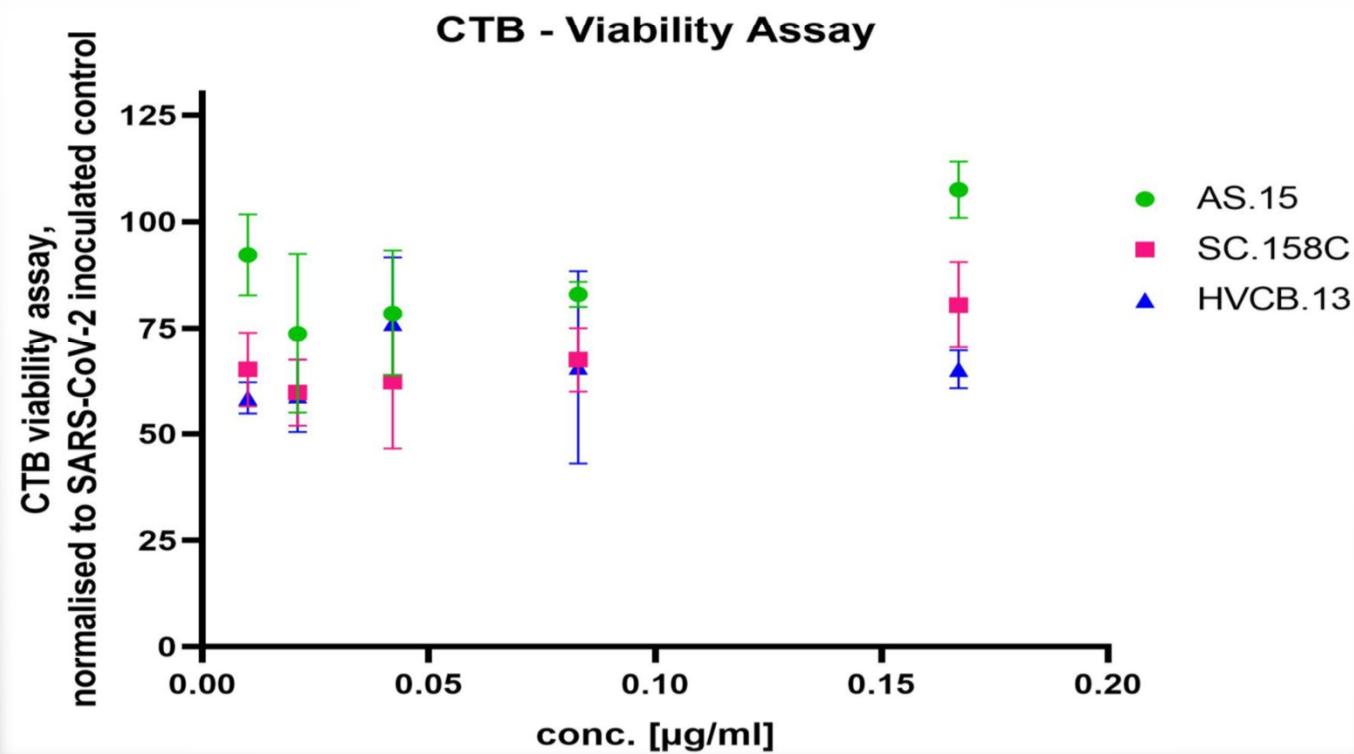
The viral ribonucleocapsid is encased within a bilayer lipid envelope.

In addition, single nucleocapsid structure the nucleocapsid is an important subunit for packaging the viral genome (ssRNA) through protein oligomerization.

This structure could be destroyed through killer toxins as well as through competent like proteases and biological substances from our oral complex proteins, which partly destroyed phospholipids bilayer of Coronavirus envelope.

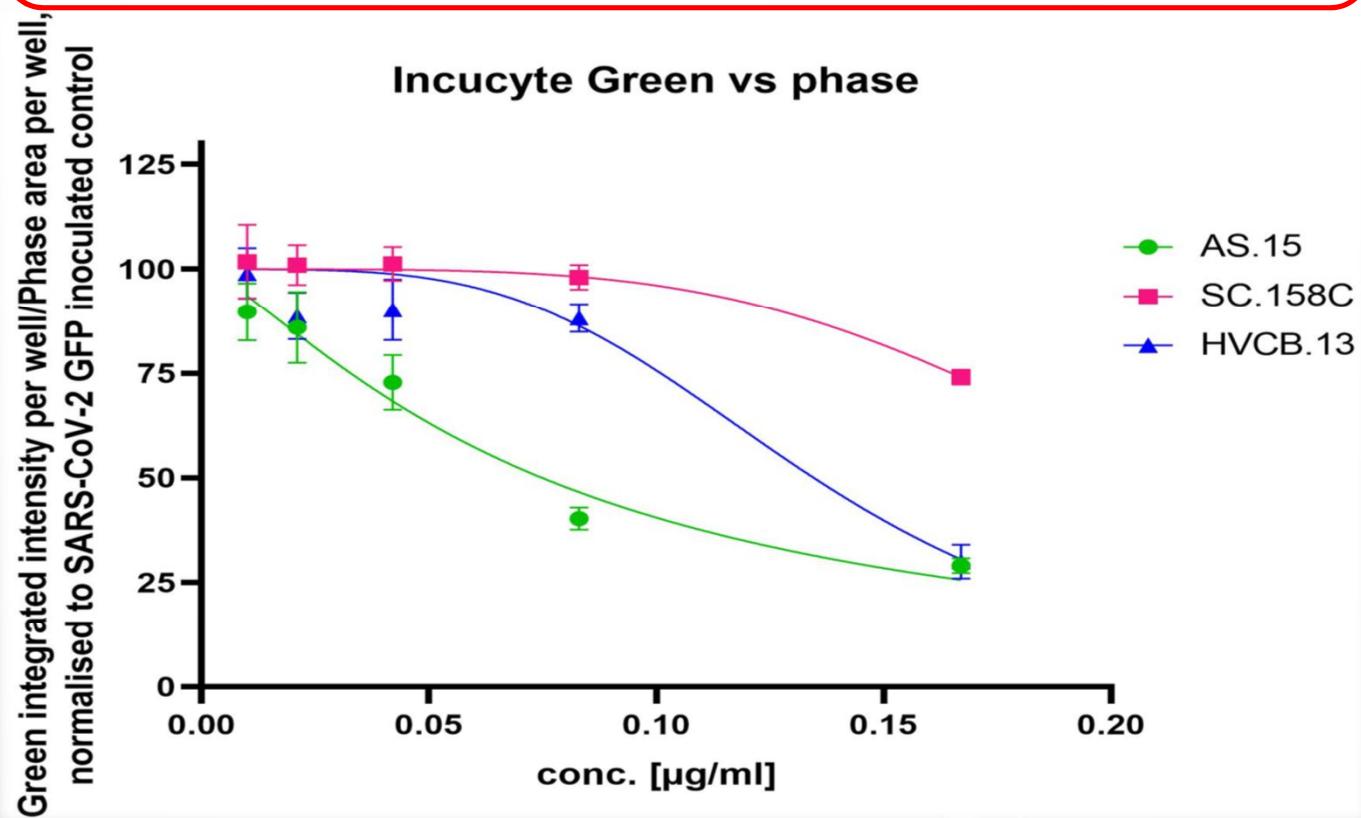


Direct virological test

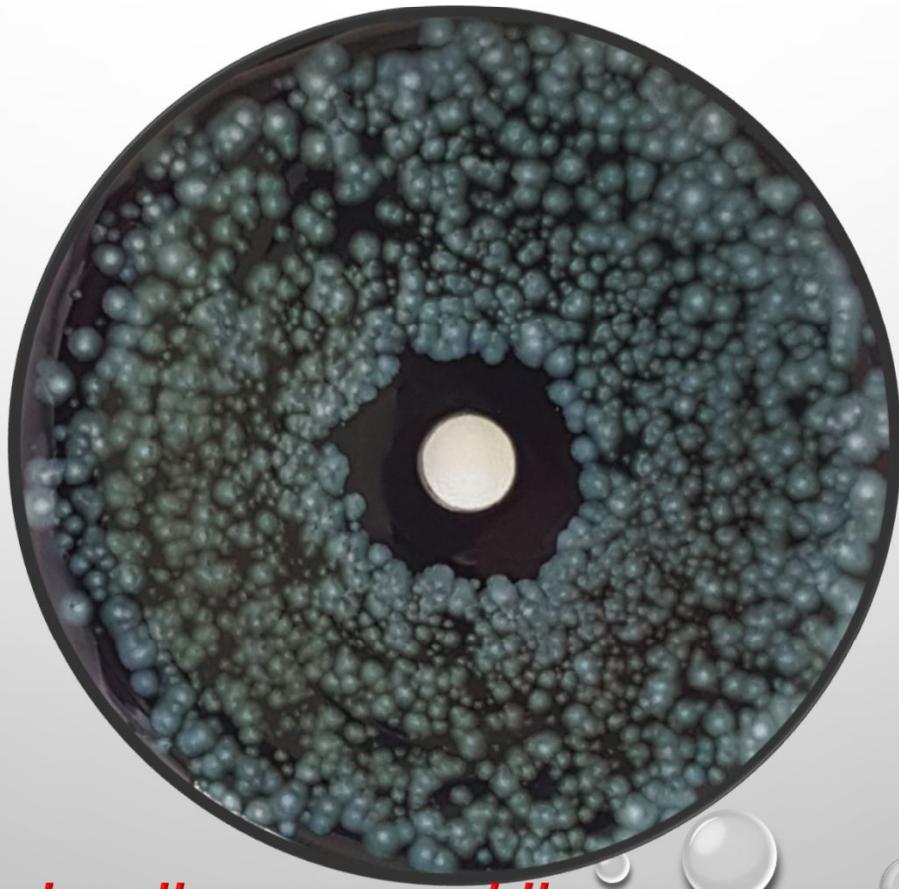
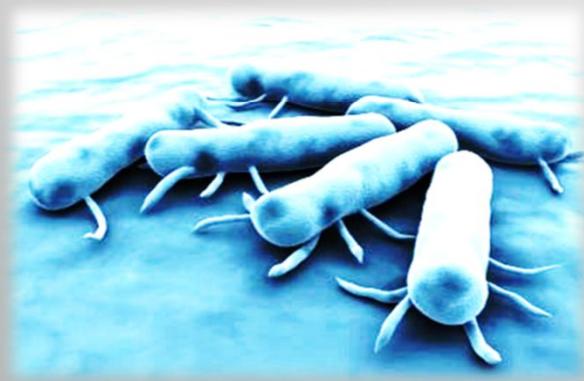


Die Konzentrationen sind hierbei anhand der von Startkonzentration 1 µg/ml berechnet.

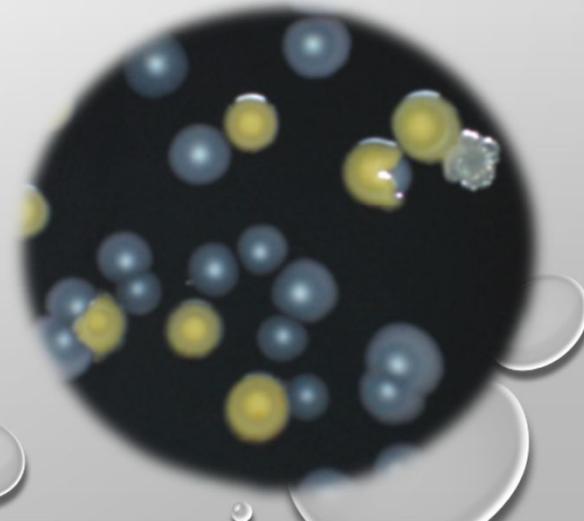
Wir sehen hierbei teilweise Inhibitionen der Infektion von bis zu 70% in den oberen Konzentrationen. Vor allem AS.15 zeigt einen dosisabhängigen Effekt auch mit niedrigeren Konzentrationen.



YCPs von Stamm AS-15 destroyed
membrane of *Legionella pneumophila*, *Aeromonas*,
Candida albicans, CoV-2

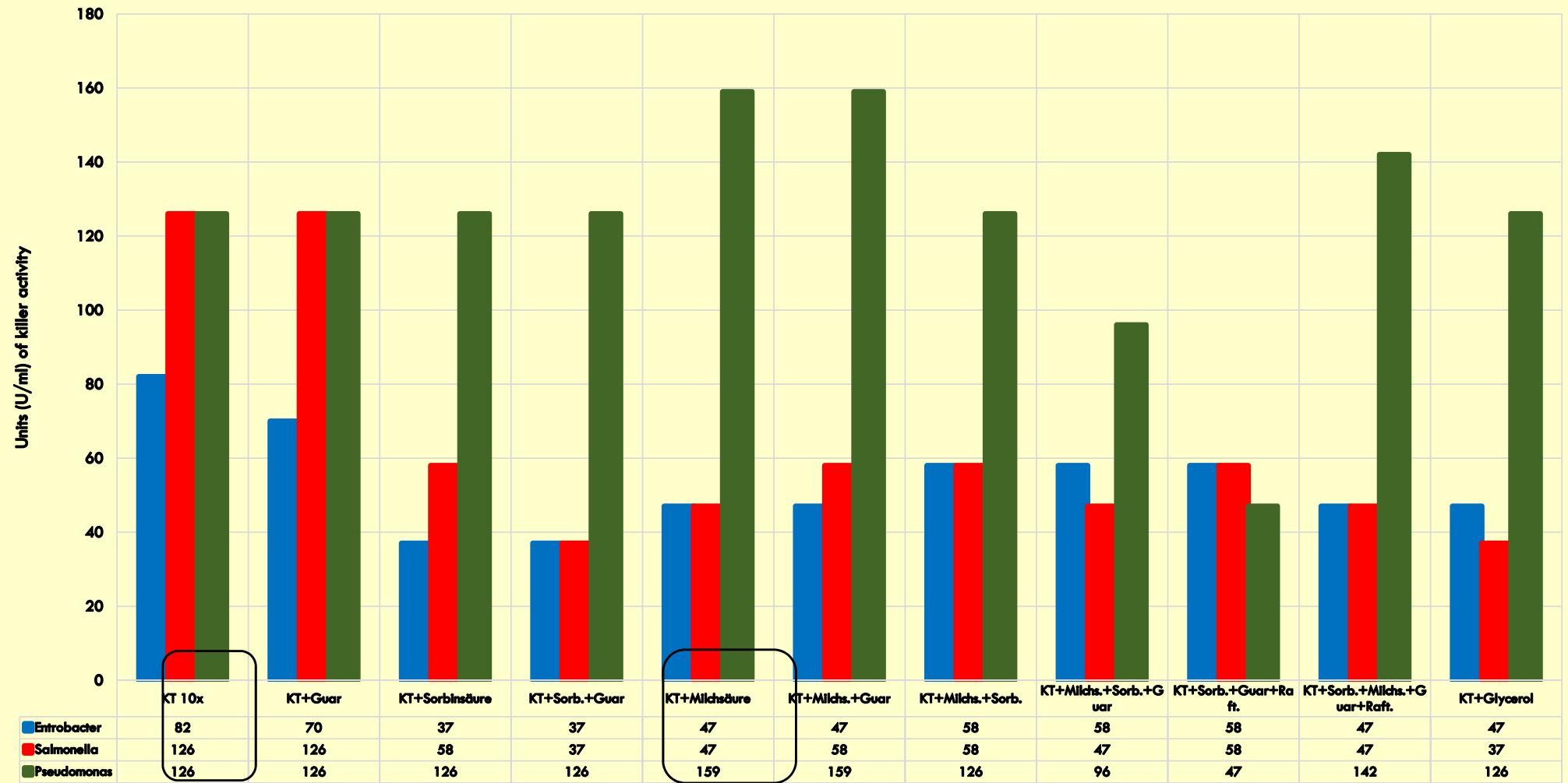


Legionella pneumophila serogruppe 1



Influence of YCPs activity on bacteria *Enterobacter* spp.,
Salmonella spp. und *Pseudomonas* spp.

█ *Enterobacter* █ *Salmonella* █ *Pseudomonas*



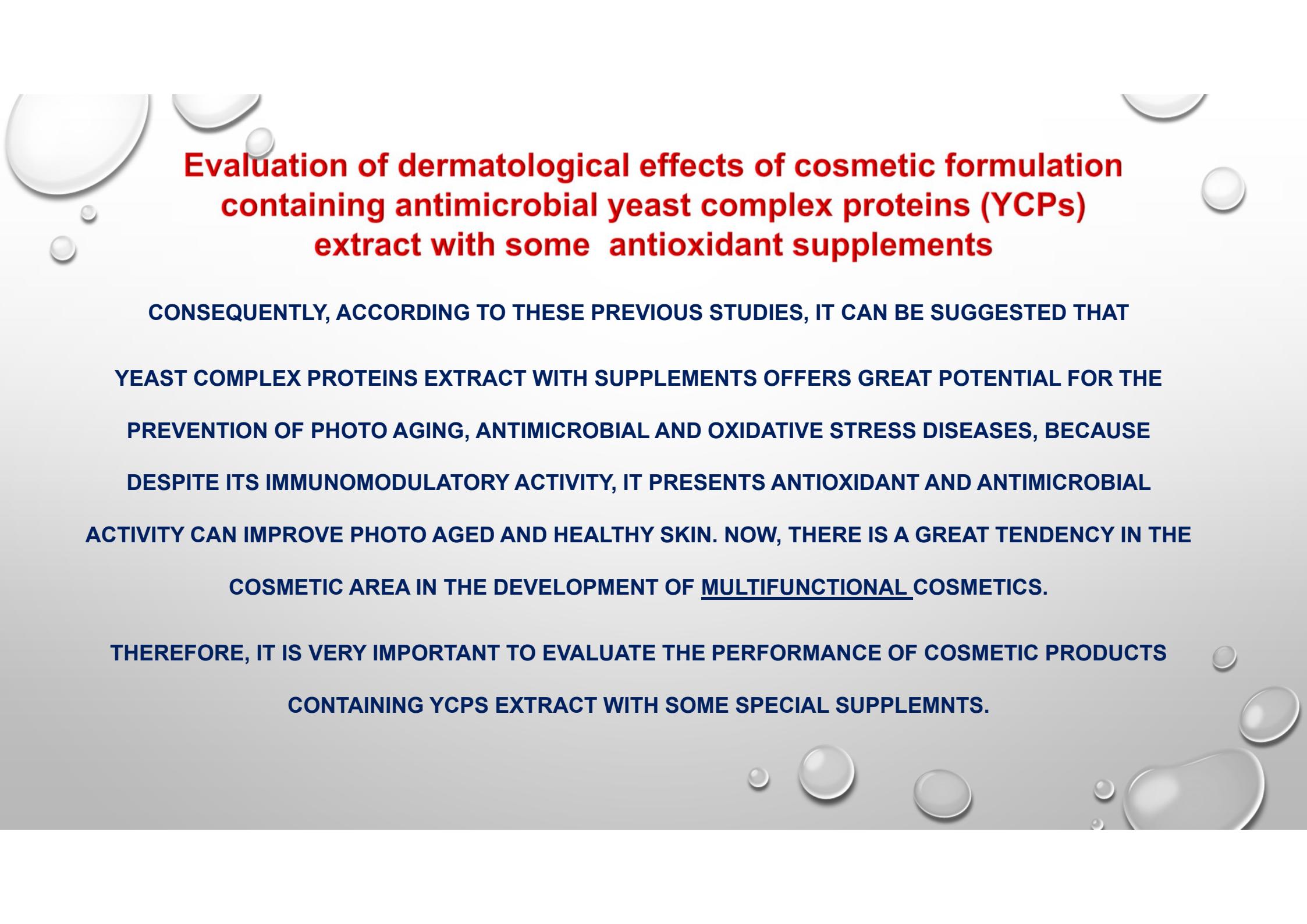
Evaluation of dermatological effects of cosmetic formulation containing antimicrobial yeast complex proteins (YCPs) extract with some antioxidant supplements

The evidence that reactive oxygen species are involved in the aging process and in the pathogenesis of many diseases as well as the indication that topical application and systemic administration of antioxidants has biological effects led to a great interest in the potential role of specific active substances in these effects. Some studies showed that antioxidants acting as photo protectives could maintain or restore a healthy skin barrier. Among the frequently used antioxidants in anti-aging products we can point out vitamin A, C and E derivatives as well as yeast antimicrobial proteins (YCPs).

Evaluation of dermatological effects of cosmetic formulation containing antimicrobial yeast complex proteins (YCPs) extract with some antioxidant supplements

On the other hand, a new tendency in cosmetic formulations is the use of biotechnological raw materials for antioxidant, immunomodulatory and photo protective purposes.

Moreover yeast complex proteins extract with very low concentration of lactic acid (in probiotic level) assuming a prominent role among biotechnological raw materials. That it is rich in amino acids that can have moisturizing properties, peptides, glycoproteins and polysaccharides (β -glucan) that can present wound healing and cell renewal antimicrobial, antiallergy and probiotic effects.



Evaluation of dermatological effects of cosmetic formulation containing antimicrobial yeast complex proteins (YCPs) extract with some antioxidant supplements

CONSEQUENTLY, ACCORDING TO THESE PREVIOUS STUDIES, IT CAN BE SUGGESTED THAT

YEAST COMPLEX PROTEINS EXTRACT WITH SUPPLEMENTS OFFERS GREAT POTENTIAL FOR THE

PREVENTION OF PHOTO AGING, ANTIMICROBIAL AND OXIDATIVE STRESS DISEASES, BECAUSE

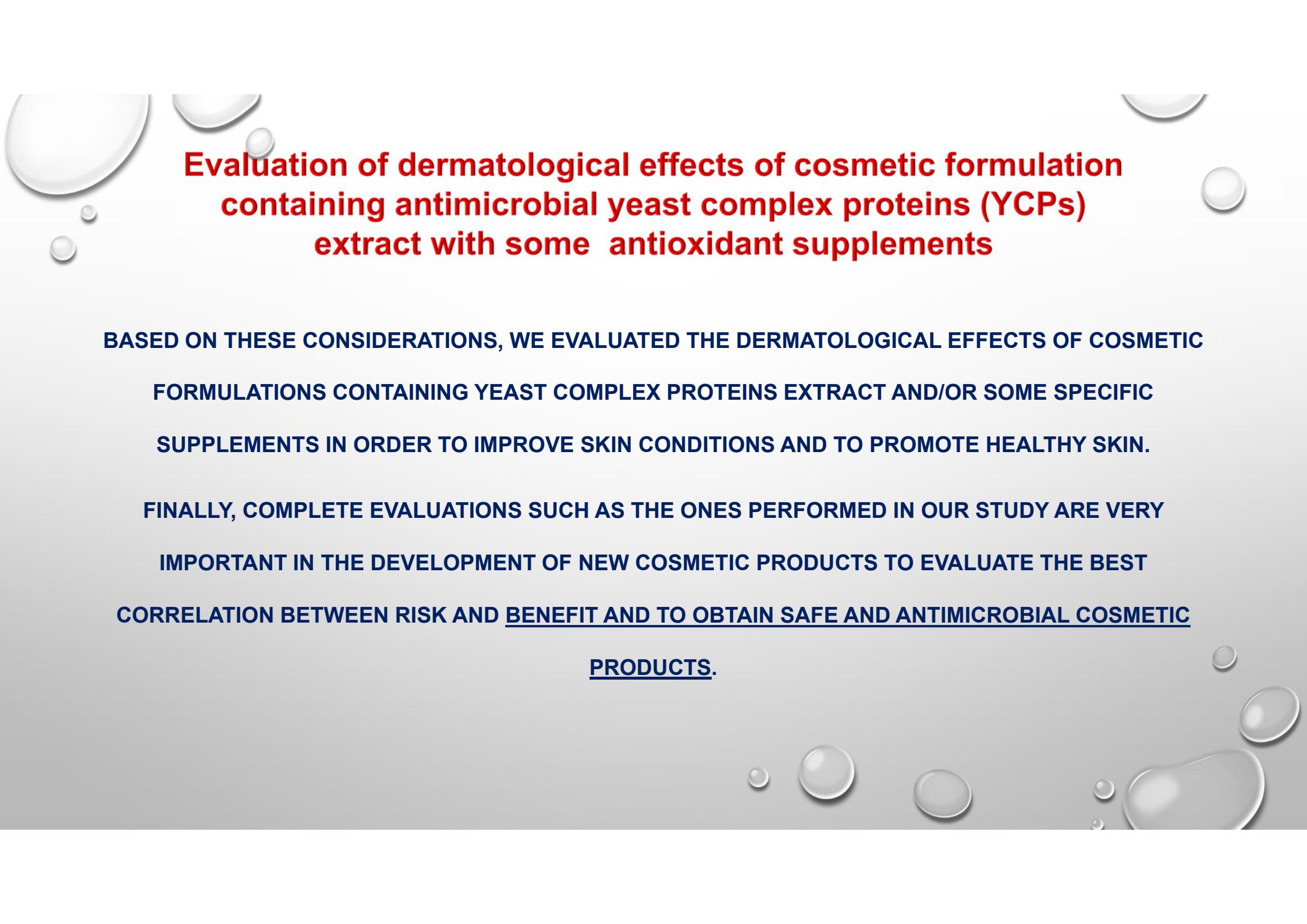
DESPITE ITS IMMUNOMODULATORY ACTIVITY, IT PRESENTS ANTIOXIDANT AND ANTIMICROBIAL

ACTIVITY CAN IMPROVE PHOTO AGED AND HEALTHY SKIN. NOW, THERE IS A GREAT TENDENCY IN THE

COSMETIC AREA IN THE DEVELOPMENT OF MULTIFUNCTIONAL COSMETICS.

THEREFORE, IT IS VERY IMPORTANT TO EVALUATE THE PERFORMANCE OF COSMETIC PRODUCTS

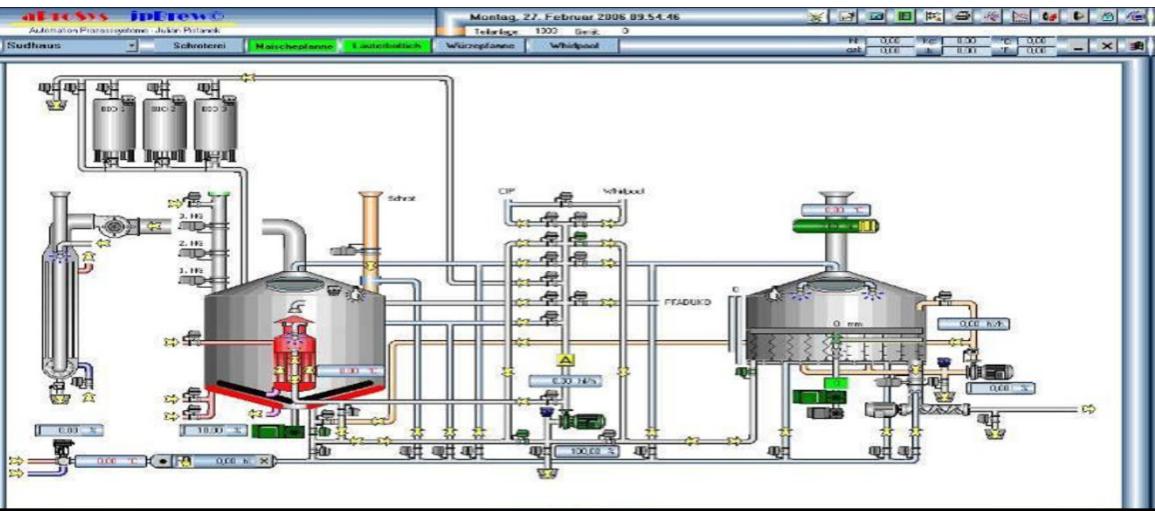
CONTAINING YCPs EXTRACT WITH SOME SPECIAL SUPPLEMNTS.



Evaluation of dermatological effects of cosmetic formulation containing antimicrobial yeast complex proteins (YCPs) extract with some antioxidant supplements

BASED ON THESE CONSIDERATIONS, WE EVALUATED THE DERMATOLOGICAL EFFECTS OF COSMETIC FORMULATIONS CONTAINING YEAST COMPLEX PROTEINS EXTRACT AND/OR SOME SPECIFIC SUPPLEMENTS IN ORDER TO IMPROVE SKIN CONDITIONS AND TO PROMOTE HEALTHY SKIN.

FINALLY, COMPLETE EVALUATIONS SUCH AS THE ONES PERFORMED IN OUR STUDY ARE VERY IMPORTANT IN THE DEVELOPMENT OF NEW COSMETIC PRODUCTS TO EVALUATE THE BEST CORRELATION BETWEEN RISK AND BENEFIT AND TO OBTAIN SAFE AND ANTIMICROBIAL COSMETIC PRODUCTS.



Brewery - yeast killer fermentation



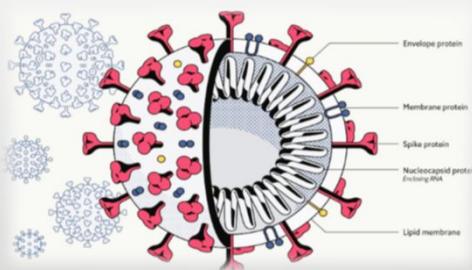
Yeast killer proteins in supernatant

Conclusion

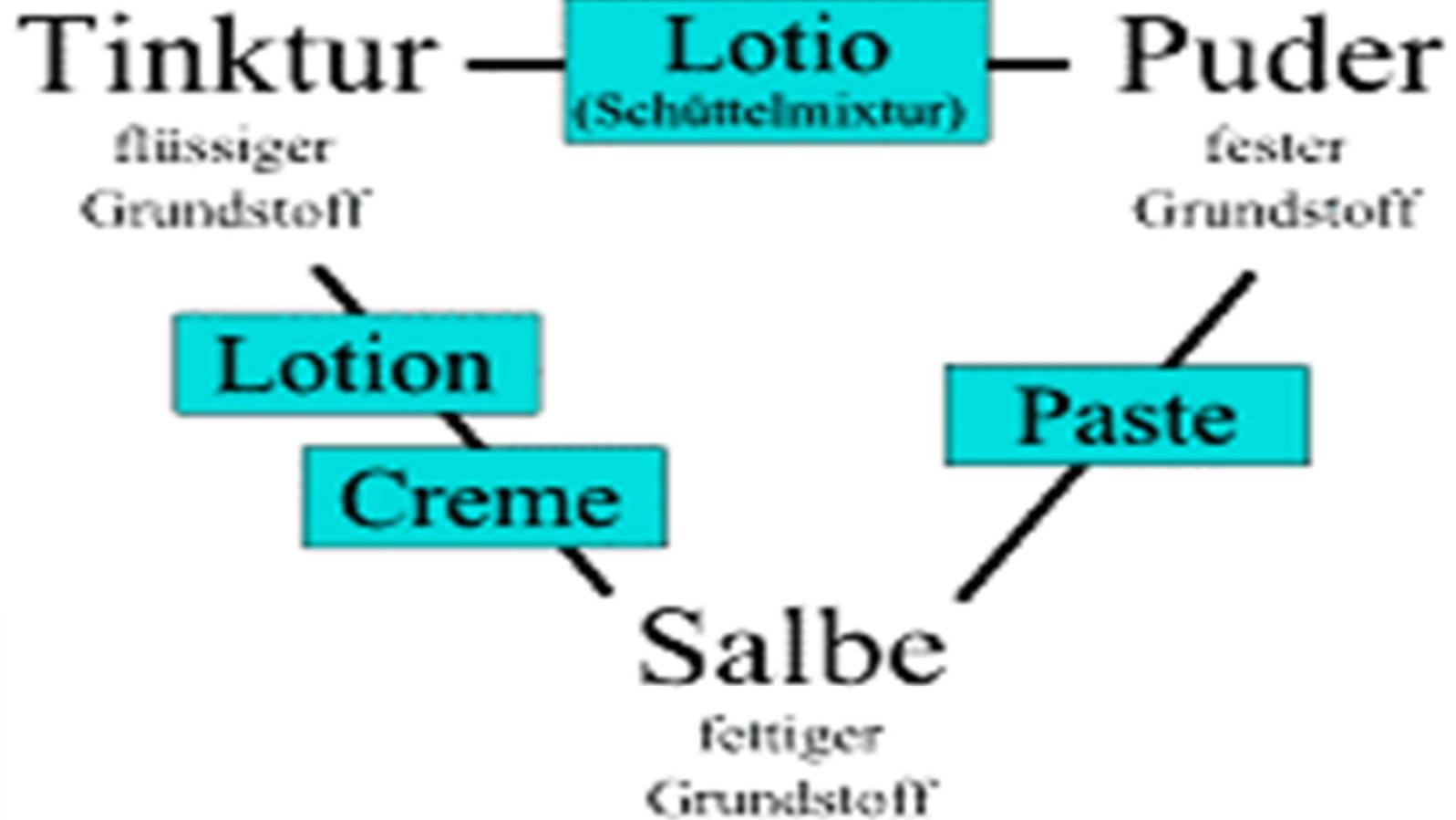
**Having regard to the selection of
our pharmaceutical preparation,
which contains specific substances against pathogene –
would be best medical need,
possibly allowing simultaneous immunization
human organism before different infections.
This preparation could be soon in market.**



THANK YOU FOR YOUR ATTENTION!



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Ig von YCPs

COVID-19

C
IgG
IgM

S

B

8.3.22

Oral vaccine

THANK YOU FOR YOUR
ATTENTION!

YCPs Creme

e-mail: anna.salek@t-online.de

Cosmetik creme