



NASER  
Technology

# NANOHYDRO SIL

SILVER NANOHYDROSOL is the technology for production of pure silver nanohydrosol – bio-friendly antibacterial product

NASER TECHNOLOGY OÜ

NASER - Nanowave Amplification by Stimulated Emission of Radiation



## About the NANOHydro Sil project

**Project goal:** setting up the production of NANOHydro Sil (NHS) pure silver nanohydrosol with unique properties

**Project mission:** replacement of toxic chemical analogues (antibiotics and disinfectants) including expensive drugs

**Project strategy:** using of the new physical principle for nanometer range electromagnetic radiation generation for effective producing NHS



## Challenges

- Development, laboratory research, pre-clinical and clinical trials of NHS preventive and medical properties for the purpose of certification
- Certification, patenting
- Development of the automated plant for NHS production
- Branding, market research, marketing campaign
- Building channels for product sales



# Product

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NANOHydro Sil is pure silver nanohydrosol (NHS) with unique properties, produced on the basis of the advanced NASER technology for electromagnetic waves generation

- Antiviral
- Antibacterial
- Antioxidant
- Immunostimulant
- Hypoallergic
- Nontoxic



# Product

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## NANOHydro Sil treats the following diseases:

- Trophic ulcers (including in people suffering from diabetes)
- Eye diseases (including ciliary mite Demodex, fungal infections)
- Purulent fistulas, acute gastrointestinal infections
- Ultrafast repair, regeneration and cicatrization of tissues (from 12 to 36 hours)
- Any pyoinflammatory processes (such as angina follicularis, etc.) within 24 hours



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# Areas of Application

Medicine

Cosmetology

Water disinfection

Plant growing

Ecology

Many other industries



# Bacteriological Effect

Microorganism	Product effect
Bacteria Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Acinetobacter baumannii	Instant 100% elimination
Bacteria Staphylococcus aureus M88A (collection strain)	
Bacteria Staphylococcus aureus MRSA (methicillin-resistant hospital)	
Bacteria Enterococcus faecalis	
Fungi NAsERda albicans	Population suppression by over 1 mln times
Fungi CNAsERda glabrata	100% elimination



# Bacteriological Effect

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## Final statement of the Moscow Oncological Institute named after P.A.Hertsen:

- Silver nanohydrosol is a two-component colloid solution composed of silver nanoparticles and ultrapure water. 100 ml of silver nanohydrosol comprise over 1 trillion of active silver nano balls with 1-20 nm diameter.
- Silver nano balls are commensurable to water molecules. They are in suspended state and do not settle out, so the solution itself remains clear. The area of antibacterial effect of 1 g of silver disintegrated to nanoparticles can reach several hundreds square meters.
- Silver nanoparticles in water envelope are perceived by human body cells as natural biocompatible components.
- Resulting data are so convincing that we consider the antibacterial and antifungal activity of silver nanohydrosol completely substantiated and proved.



# NANOHydro Sil Production

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Metal Nanohydrosol production



[Play video](#)



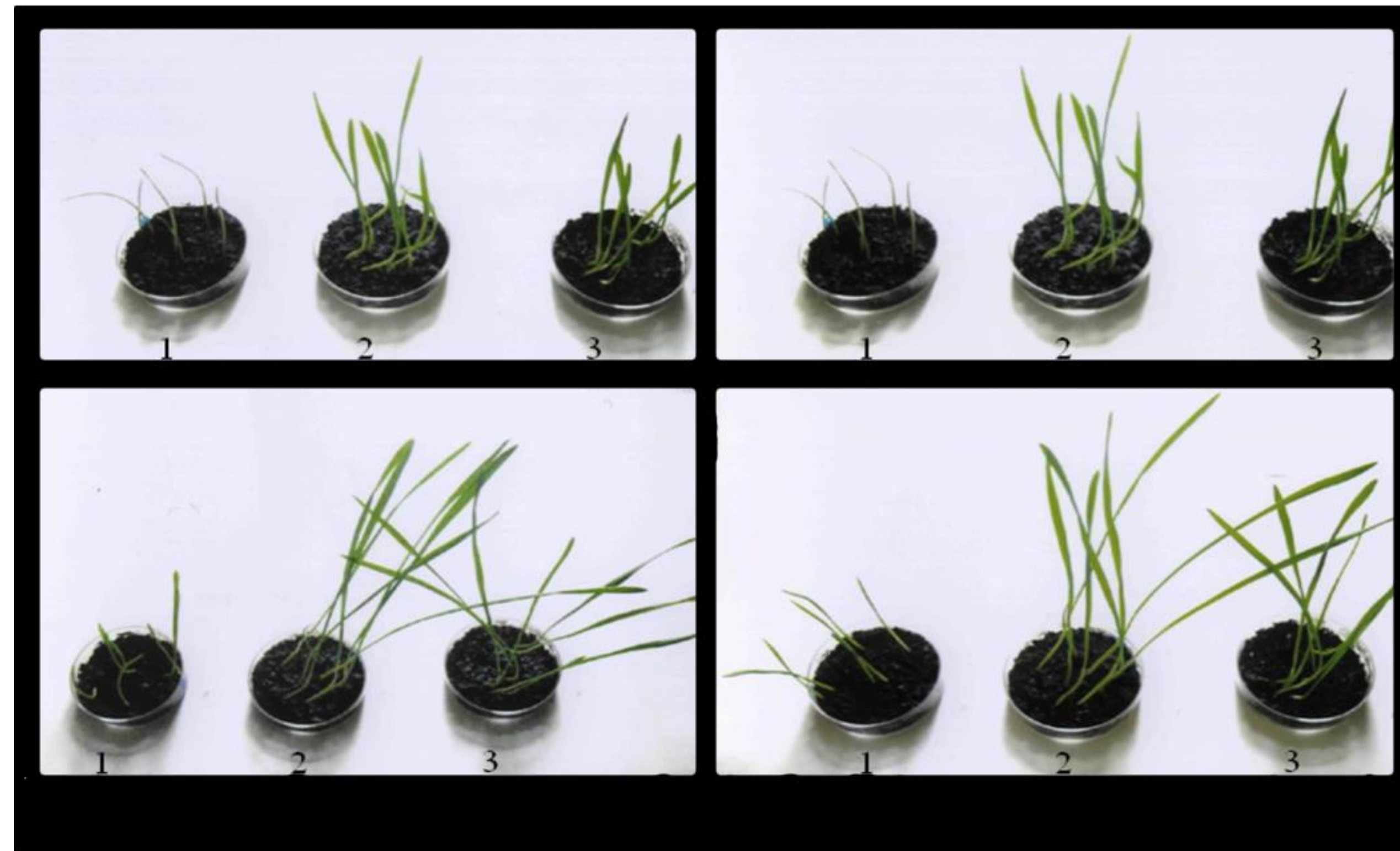
# NHS Influence on Seeds Formation

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1. Seeds soaking in water
2. Seeds soaking in liquid with silver nanoparticles
3. Seeds soaking in liquid with cobalt nanoparticles

4 days

5 days



6 days

8 days

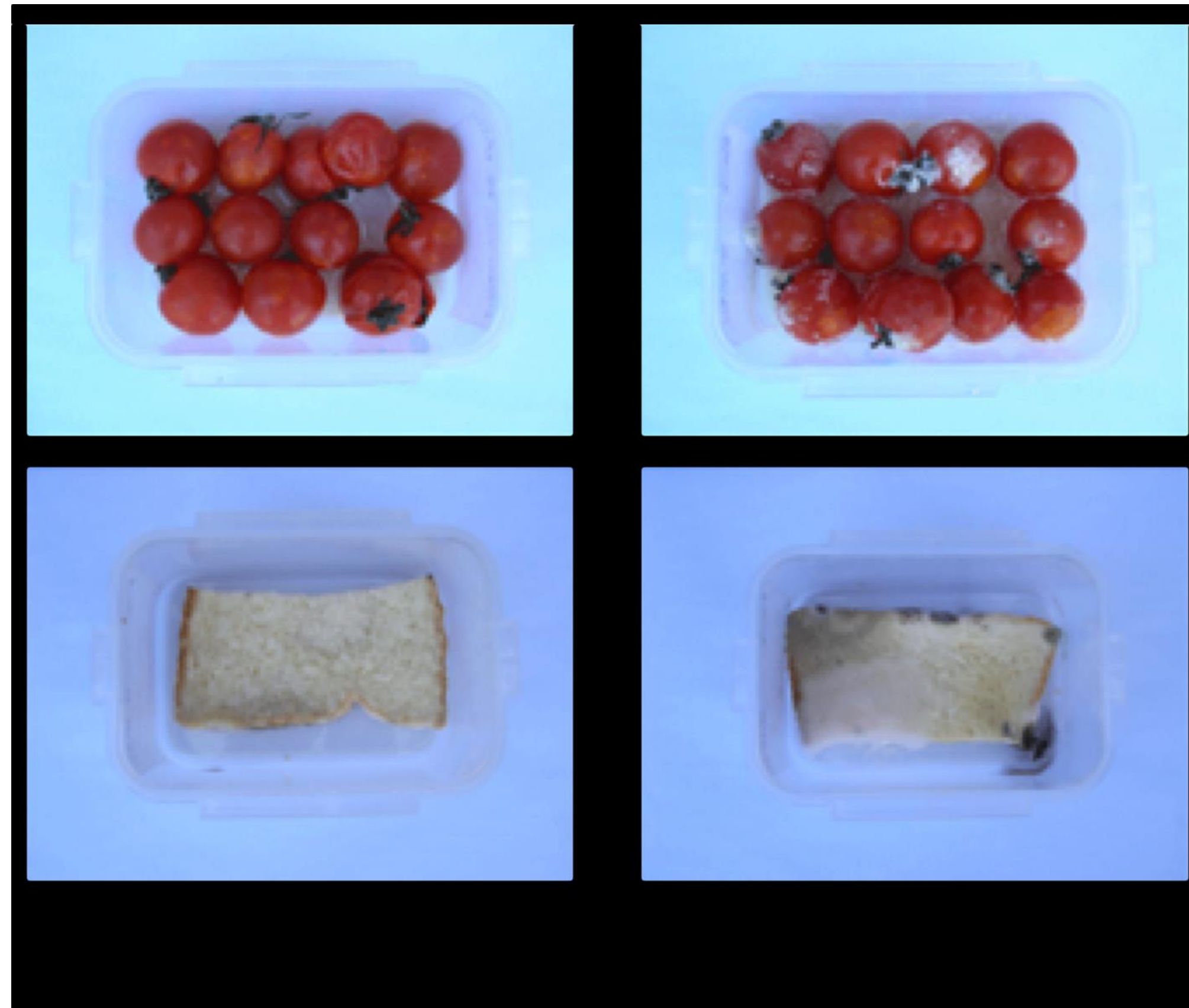


# NHS Influence on Food Products Preservation

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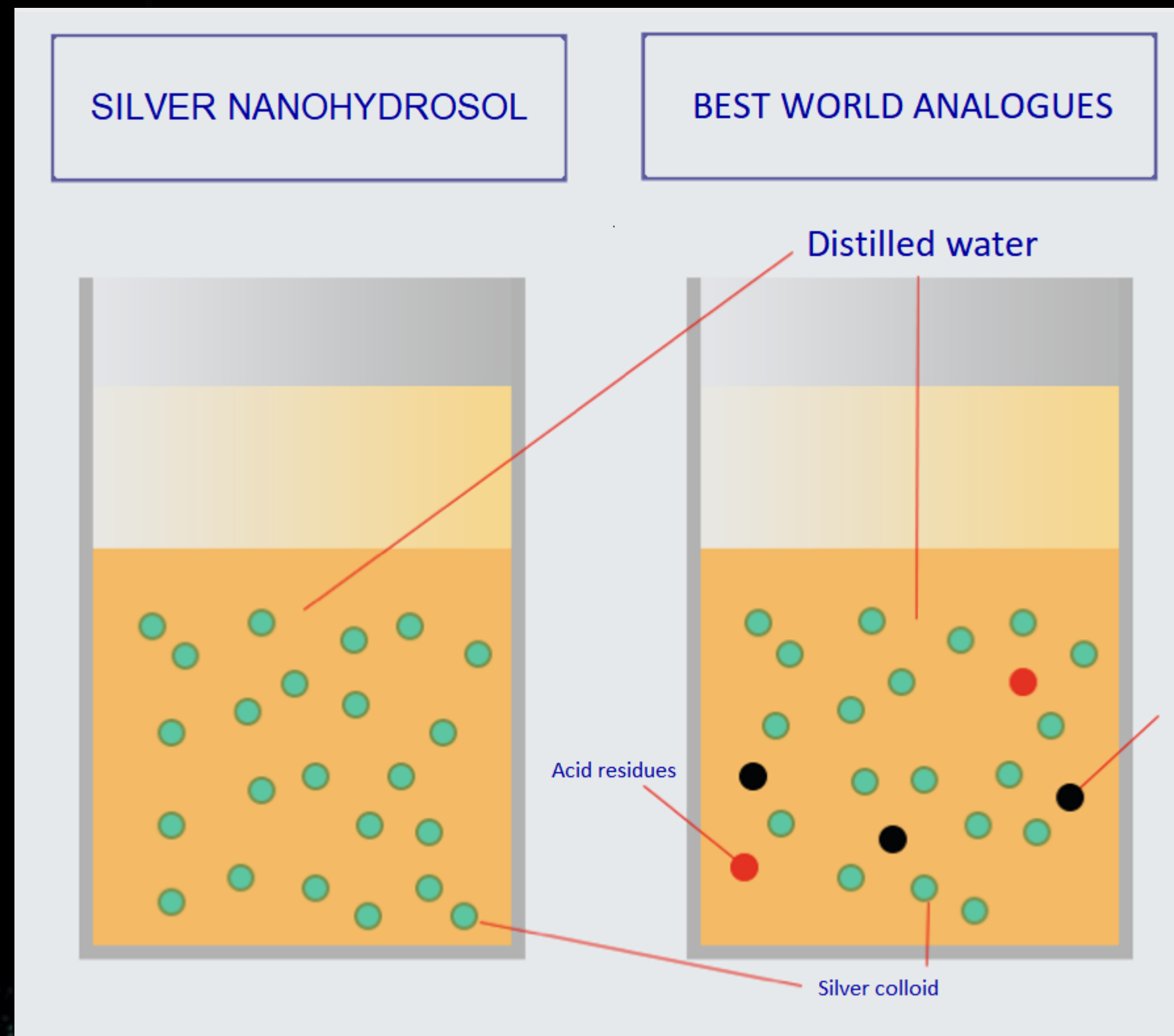
Treated with NHS

Without NHS treatment





# NHS Advantages over Existing Analogues Comprising Colloid Silver



- NHS production method and properties are unique
- Nontoxic
- Impurity-free
- Low production cost
- High antibacterial properties
- Long lifetime without surface-active agents (SAA)



# Market Analysis



Market volume for NHS  
≈ \$1,1 bn



## Potential



## World market figures

- Non-prescription drugs – \$115.8 bn
- Antiviral drugs – \$51.5 million
- Dermatological drugs – \$ 13,19 million
- Antineoplastic drugs – \$ 92,35 million

- 10-15% growth to 2022 according to DSM Group
- Non-prescription drugs from 10% to 20% to 2022
- Target markets: Europe, USA, Latin American and Southeast Asian countries



# NANOHydro Sil — Consumer Market





## Business Model

- Business model: B2B
- Product: NHS hydrosol in various concentrations
- Area: market of products for prevention and treatment of respiratory infections of bacterial, viral and mixed etiology, pharmacology
- Clients (distribution channels): large-scale producers in the field of drugs, pharmacology, MLM with own production
- Potential partners : drugs, biologically active supplements producers, MLM companies



## Business Model

- Realization method: selling of production technology
- Growth prospects: the development of other application areas and expansion of product range with the use of other metals and minerals
- Project implementation period : 6 months for 1<sup>st</sup> stage, 36 months for all stages



# Road Map

Research and development, manufacturing of the equipment. Production of first lots of nanohydrosol NHS.

2008



The idea of the new method for production of various materials nanoparticles in liquid medium



2009-2014

2015-2018



NHS nanohydrosol research and testing. Optimization of equipment characteristics.

Investing company



2019



Go forward...



# Project Stages. Investment Allocation by Stages

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1

European certification procedures, equipment documentation preparation in accordance with the Unified system for design documentation, designing of the production site, worldwide patenting

**€ 2.48 million**

2

Manufacturing of the plant in Estonia, organization of a production site, permit procedure for putting into commission, certification of the production complex, setting-up of the laboratory

**€ 5.75 million**

3

Production startup (current assets), products marketing

**€ 6.55 million**

4

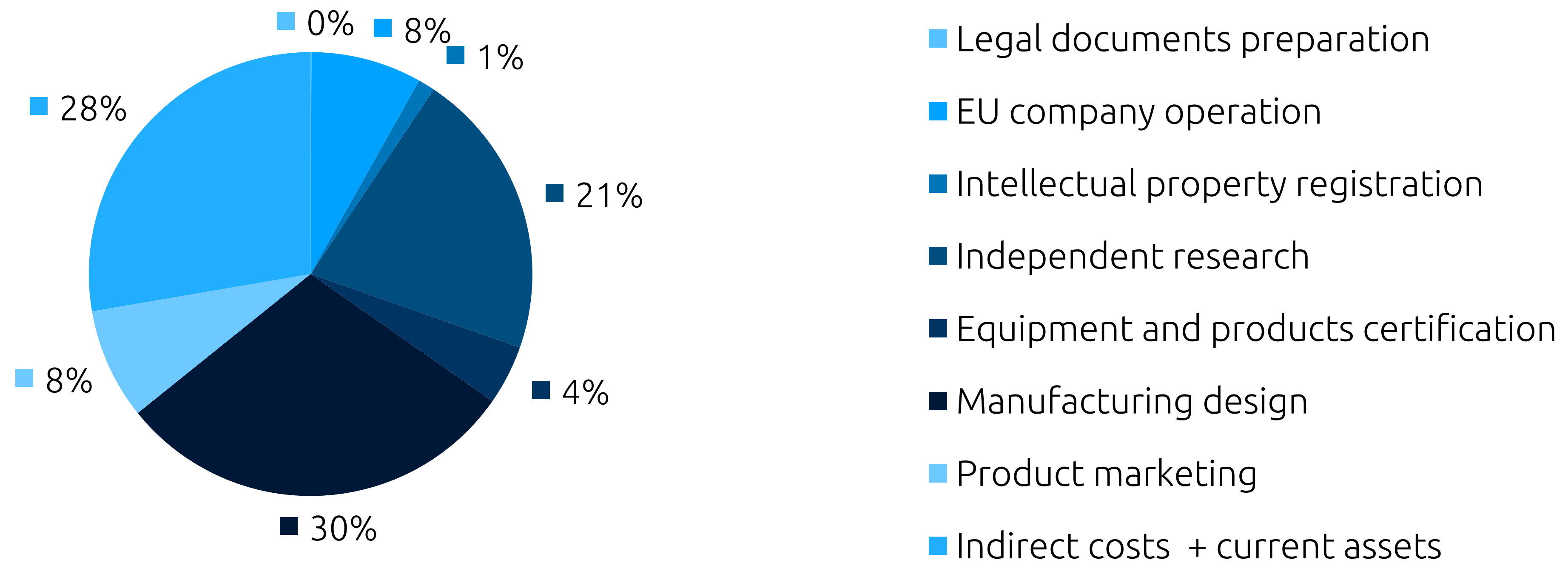
The plant manufacturing (more effective or several common plants to increase production volume), the organization of a production site, permit procedure for putting into commission, certification of the production complex, product marketing

**€ 3.36 million**



# Investment Allocation by Expense Items

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# Team



Pastukhov Andrew

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# New Advanced Innovative Technology

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