

Supernatural Blemish Serum



Acne and blemishes are considered a universal skin occurrence, impacting a large proportion of adolescents and young adults and, for many, continuing into adulthood. Importantly, this is often associated with negative impacts on an individual's emotional wellbeing^{1,2}. In spite of this, cosmetic treatments appear to carry limitations and often present an individual with a choice between efficacy and undesirable impacts on the skin. Emma Lewisham has provided a solution to this compromise by identifying and working with a key component of blemish formation—the skin's microbiome. Delivering a world first patented³ live human skin probiotic targeted towards blemishes, the Supernatural Blemish Serum has demonstrated an ability to reduce blemishes while simultaneously improving markers of skin health and beauty.

Formulation Design & Delivery

Blemishes have a complex and multifactorial pathway to development, some areas of which are relatively new additions to the skincare category. However, through understanding of blemish formation, the contribution of a key skin pathogen known as *Cutibacterium acnes* (*C. acnes*) becomes apparent and its importance represents an opportunity to interact with the skin's own resident microbes (or 'microbiome') to fortify its own defenses and reduce the severity or incidence of blemishes.

How does our microbiome contribute to blemishes?

The skin microbiome refers to the community of microorganisms that live on the surface and in the layers of the skin. It is composed of a diverse range of bacteria, fungi, viruses, and other microbes that inhabit the skin's various regions. The skin's microbiome plays a crucial role in maintaining the overall health and function of the skin by contributing to the skin's pH balance, acting as a protective barrier against pathogens, and interacting with the skin's immune system. Our skin's microbiome is a key foundation of skin health and disruptions in the balance of the skin microbiome, such as a decrease in beneficial bacteria or an increase in pathogens (i.e. 'bad bacteria'), can contribute to a range of concerns such as dryness and irritation, acne, and blemishes.

A key player in blemish development is *C. acnes*, a pathogen commonly found on the human skin, notably in the sebaceous follicles. *C. acnes* thrives in sebum-rich environments, which is why acne and blemishes are often associated with higher oil production, as an ideal environment for *C. acnes* growth is sebum-rich environments. The growth of *C. acnes* and consequential triggering of an immune response is considered a key factor in the formation of various types of blemishes⁴.

How does Supernatural Blemish Serum work with the skin microbiome to reduce blemishes?

The microbiome is a recent area of interest for the skincare category, yet technical challenges have restricted delivery of truly live probiotic products. The World Health Organisation defines probiotics as "Live microorganisms that when administered in adequate amounts confer a beneficial health effect on the host"⁵. This clear definition, coupled with the technical challenges of achieving a live probiotic in formulation, mean that very few products in market are truly probiotics. The vast majority are formulated using prebiotics, postbiotics, or probiotics that are live at manufacture but with very short true lifespans. However, specific strains of live probiotics demonstrate an ability to colonise on the skin, reduce the relative population of key skin pathogens, and also possess an ability to directly inhibit these pathogens, so possess notable increased capability to deliver meaningful benefit to the customer^{6,7}.

Emma Lewisham's Live Probiotic Blemish serum contains a patented live probiotic strain, *Micrococcus luteus* Q24 (*M. luteus*)³, that naturally lives on healthy human skin and has 20 years of research demonstrating its ability to target and reduce blemishes while simultaneously increasing skin health markers^{8,9}. This unique strain was identified by Professor John Tagg as part of an extensive human microbiome swabbing programme.

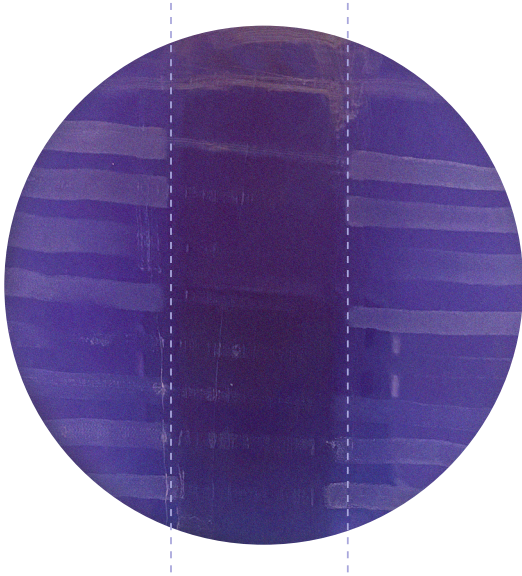
Key Research & Testing Results

Emma Lewisham uniquely commissions independent biomedical testing to validate the performance behind every product. While formulations harness ingredients that possess their own scientific validation, Emma Lewisham also validates the efficacy of their finished formulations. Rigorous scientific testing, including both clinical (*in vivo*) and laboratory (*in vitro*) is routinely performed, where their efficacy regularly outperforms leading skincare brands.

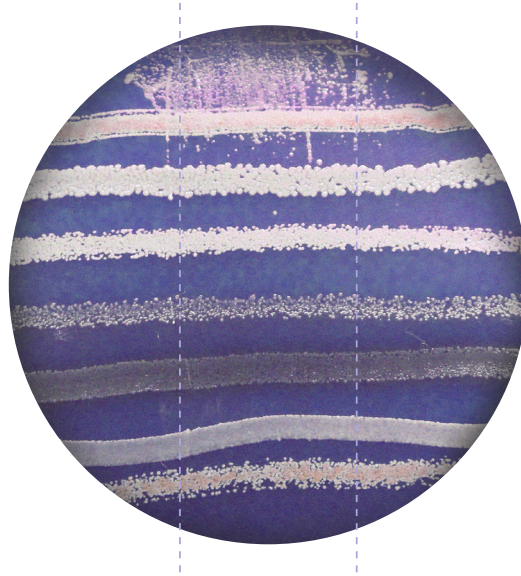
Validation of shelf-life probiotic survival and delivery in finished product

The technical challenges of maintaining probiotic viability during shelf life cannot be understated and are undoubtedly a significant contributor to the vastly restricted probiotic-related skincare products that are truly live¹⁰. The Supernatural Blemish Serum delivers a formulation that has been extensively tested to confirm the life of *M. luteus* throughout its shelf life and delivery of target dose from the finished product.

Impact Investigated	Methodology Summary	Results
Probiotic stability in formulation	Enumeration of <i>M. luteus</i> at specific time points over a two-year period (250 C°/60% RH) to indicate shelf stability.	Confirmation of target shelf-life stability.
Probiotic stability in packaging	Enumeration of <i>M. luteus</i> at specific time points at 250 C°/60% relative humidity and 250 C°/60% relative humidity to indicate impact of packaging.	Confirmation of maintained stability in packaging.
Target dosage delivery	Measurement of single-pump application volume, enumeration, and calculation of dosage per application in finished packaging. Objective of achieving dosage delivered in <i>in vivo</i> research.	Confirmation of target dosage achieved.



In vitro testing result shows inhibition of acne bacteria between lines, where Emma Lewisham Supernatural Blemish Serum has been applied.



In vitro testing result shows failure of conventional probiotic skincare products to inhibit acne bacteria.

Demonstration of Key Skin Pathogen Inhibition — *in vitro*

The unique and beneficial behaviour of *M. luteus* is demonstrated through its ability to inhibit key skin pathogens. This capability is not universal, highlighting the importance of selecting, researching, and delivering specific strains of probiotics with demonstrated ability to deliver the target outcome.

Testing Summary	Pathogenic Strains Inhibited	Target Outcome
<i>In vitro</i> testing of inhibition of key skin pathogens by <i>Micrococcus luteus</i> Q24	<ul style="list-style-type: none"> – <i>C. acnes</i> – <i>C. albicans</i> – <i>P. propionicus</i> – <i>S. agalactiae</i> – <i>S. dysgalactiae</i> – <i>S. pyogenes</i> – <i>S. epidermidis</i> – <i>S. aureus</i> – <i>S. simulans</i> – <i>S. xylosum</i> 	Reduction of skin blemishes and improvement of overall skin health and condition through reduction of key skin pathogens.
	<ul style="list-style-type: none"> – <i>C. acnes</i> NCTC 737 – <i>C. acnes</i> China 2.1 – <i>C. acnes</i> DSM 16379 – <i>C. acnes</i> 12.1 Li – <i>C. acnes</i> 18.1 AI – <i>C. acnes</i> 21.1 Li – <i>C. acnes</i> 39.1 RI – <i>C. acnes</i> 42.1 RI 	Reduction of blemishes through reduction of pathogenic <i>C. acnes</i> .

Confirmation of colonisation on face and achievement of target skin improvements — *in vivo*

Further supporting the benefit of delivering a skin-specific and truly live probiotic, *in vivo* demonstrates the ability of this probiotic-containing formulation to achieve colonisation, impact on skin pathogens, and impact on skin health markers.

Impact Investigated	Methodology Summary	Results
Colonisation on face	<i>In vivo</i> swabbing – samples taken at pre, 8h, 11 days, and 25 days after usage period commenced (twice-daily application). Washout period swabbing performed at 7 days after cessation of usage period. Sample collection and instruction performed by scientific collaboration partner, with sample analysis and reporting performed by independent body.	Time-dependent significant increase in colonisation of strain. Post washout measurement demonstrated reduction of strain presence after application ceased, but maintained significantly above pre-application measurement.
Reduction of relative abundance of <i>C. acnes</i> on face	<i>In vivo</i> swabbing – samples taken at pre, 8h, 11 days, and 25 days after usage period commenced (twice-daily application). Washout period swabbing performed at 7 days after cessation of usage period. Sample collection and instruction performed by scientific collaboration partner, with sample analysis and reporting performed by independent body.	Time-dependent decrease in relative abundance of <i>C. acnes</i> . Post washout measurement demonstrated partial restoration of relative abundance within 7 days of cessation of application.
Impact on blemishes	<i>In vivo</i> testing performed by independent body using 98 subjects over 28 days. Individuals with moderate to severe acne self-identified and its persistence or reduction was self-reported at the end of the 28 day period. Photos were also provided to the testing party for comparison.	79% of participants who reported moderate to severe acne at the beginning of the trial period (n=24) recorded low/no presence at day 28. Self-reporting was accompanied by photographic demonstration.
Impact on wider skin health and condition markers	<i>In vivo</i> testing performed by independent body using 98 subjects over 28 days. Individuals self-reported skin quality markers before application period commenced and again at the end of the 28 day period. Photos were also provided to the testing party for comparison.	<ul style="list-style-type: none"> – 82% of participants who reported dry areas on day 0 (n=40) recorded low/no presence at day 28. – 62% of participants who reported skin redness on day 0 (n=29) recorded low/no presence at day 28 – 58% of participants who reported oiliness on day 0 (n=50) recorded low/no presence at day 28.

Supernatural Blemish Serum Summary

Advances in research of the skin's microbiome have highlighted the opportunity to work with our microbial communities to deliver more optimal solutions for blemish reduction. However, these advances have resulted in severely limited options for the consumer seeking live probiotic solutions from skincare. The Emma Lewisham Supernatural Live Probiotic Blemish Serum delivers an effective dose of truly live probiotics, harnessing a patented strain that naturally lives on the skin. This strain holds 20 years of research demonstrating its unique ability to colonise on the skin, inhibit key pathogens, and reduce blemishes while improving skin health markers. The result is a highly unique formulation that improves the skin's microbiome, a key skin health fundamental, to not only reduce blemishes but to increase the overall condition and appearance of the skin.

References

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All Emma Lewisham products are formulated according to Regulation (EC) N° 1223/2009 which is the main European regulatory framework to strengthen the safety of finished cosmetic products. Emma Lewisham products have been independently reviewed by an expert safety assessor according to these regulations and issued a safety certificate. As part of this review, they have confirmed there are no groups of people, such as pregnant or breastfeeding women, for which Emma Lewisham products would be unsafe.

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