



From molecule to market: leading the science behind a new emulsifying wax

Product: Crodex™ M emulsifying wax

Industry: cosmetic and pharmaceutical ingredients

Project Duration: 12 months

How targeted study design and evidence-led positioning took a novel personal care ingredient from concept to a substantiated, commercially credible launch.

Executive summary

I was the R&D Lead on the multidisciplinary team that developed Crodex™ M, a novel anionic emulsifying wax now marketed for skin care, baby care, medicated body care, hair relaxers and conditioners. My contribution spanned the technical spine of the project: setting the target product profile with the synthesis team, designing and running the studies that proved the ingredient's mildness, stability and robustness, and translating that data into the claims and datasheet that ultimately carried the product to market.

The result was an ingredient that let formulators build simple, one-pot emulsions with a measurably milder profile than conventional SLS-based alternatives, while withstanding conditions (high pH, high temperature, difficult actives) that typically break emulsifying systems. This case study sets out how that outcome was engineered, not just discovered.

The Challenge

Sodium Lauryl Sulphate (SLS)-based emulsifying waxes were the industry default, but they carried two commercial liabilities. First, a well-documented skin-mildness problem: repeated use compromises the skin barrier, which increasingly conflicts with consumer and brand expectations around gentle, sensitive-skin formulations. Second, a formulation reliability problem: these waxes struggle with high-value actives such as salicylic acid and urea, and with the elevated temperatures common in manufacturing and in hot-climate markets, both of which are commercially important, growing segments.

The brief was to develop an emulsifier that could remove both liabilities at once: mild enough for sensitive and baby care claims, robust enough for relaxers and medicated actives, and simple enough to manufacture in a single pot, a requirement aimed squarely at cost-sensitive and emerging markets where multi-stage processing is a real barrier to adoption.

My role and responsibilities

As R&D Lead, I sat at the intersection of chemistry, formulation and marketing, the position from which product claims either hold up or fall apart. Working alongside the synthesis and marketing teams, my responsibilities covered the full technical arc of the project:

- Defining the target product profile jointly with the synthesis team, based on the market and formulation gaps identified above.

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- Translating market and formulation needs into concrete technical product requirements the chemistry could be designed against.
- Giving direction to the molecule's development by specifying the performance characteristics the ingredient needed to hit.
- Designing and overseeing the efficacy and performance studies used to test and prove those characteristics.
- Generating and analysing the data on mildness, stability, robustness and compatibility with challenging actives.
- Identifying which findings were strong enough to substantiate a marketing claim and building the evidence behind each one.
- Interpreting technical results and reframing them as customer-facing benefits.
- Working with marketing colleagues to shape the final technical datasheet and overall product positioning.

Scientific strategy and product development approach

Rather than testing the ingredient against a generic checklist, I worked back from the two liabilities identified in the business challenge and built the target product profile around directly displacing them. That meant setting explicit, testable thresholds from the outset: a mildness benchmark measured against SLS-based incumbents rather than an abstract "mild" descriptor, a thermal stability target of 50°C to serve hot-climate markets, and a pH tolerance wide enough to cover both standard creams and high-pH relaxer chemistry.

On the composition side, I worked with the synthesis team on the rationale for combining Cetearyl Alcohol with Potassium Cetyl Phosphate, phosphate ester chemistry known for skin compatibility, and for optimising the ratio of the two components for performance rather than settling on it by default. Every study that followed was designed to test one of these pre-defined targets, so that a positive result would translate directly into a defensible, quantified claim rather than a vague performance note.

The goal was never simply "does it work", it was "can we prove, with head-to-head data against the incumbent, exactly how and by how much it works better."

Study design and data generation

I designed a programme of comparative, in-use studies rather than isolated lab tests, each one built to isolate a single variable against an SLS-based control so the results would stand up to scrutiny from formulators and technical buyers.

I was responsible for setting the protocols, ensuring each test formulation isolated the emulsifier as the only variable, and interpreting the resulting datasets, including the microscopy work confirming that oleosome (liquid crystal) formation was preserved even in the presence of salicylic acid, a result that mattered because it showed the aesthetic benefit didn't have to be traded off against performance.

Study	What it isolated	Method
Rheology at reduced usage	Whether a lower dose could match incumbent performance	7% Crodex M vs. 9% SLS-based wax, viscoelastic profiling
Four-week TEWL and stratum corneum study	Cumulative skin barrier impact of repeated use	Twice-daily application over 4 weeks, tape-stripping and TEWL measurement
24-hour occlusion study	Direct mildness comparison, actives-free control	50µl occlusion, TEWL before/after vs. a wax-free control
Difficult-active compatibility	Robustness with salicylic acid and urea	Head-to-head formulations, microscopy and thermal stability panels
Blind sensory panel	Aesthetic parity with the incumbent	Comparative panel across spread, greasiness, absorbance and cushion

Key findings and commercial impact

Each of the results converted directly into a market-facing claim: demonstrably milder on the skin barrier, usable at lower dose without sacrificing rheology, stable in conditions that break the incumbent, and compatible with

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high-value difficult actives like salicylic acid and urea, while the sensory panel confirmed none of this mildness and robustness came at the cost of the aesthetic feel formulators and consumers expect.

Cross-functional collaboration

The project only worked because the technical requirements, the chemistry, and the commercial story stayed connected throughout, none of the three functions could set direction in isolation. With the synthesis team, I worked from performance targets back into composition decisions, including the optimisation of the Cetearyl Alcohol to Potassium Cetyl Phosphate ratio. With marketing colleagues, I worked in the other direction: turning verified data into claims that were both commercially compelling and technically defensible, so nothing in the final positioning outran the evidence behind it.

That two-way translation, commercial need into technical requirement, and technical result back into commercial claim, was the core value I brought to the team, and it's the same discipline I now apply as a consultant helping technical organisations connect R&D output to market positioning.

Technical datasheet development and claim creation

I worked with marketing to build the final Crodex M datasheet, the document that would be read by formulation chemists, technical buyers and regulatory teams, and that needed to hold up under exactly that scrutiny. That meant deciding which results were strong enough to state as a headline benefit (broad pH range, high-temperature stability, one-pot processing, compatibility with difficult actives) and which needed the fuller supporting data, the TEWL figures, the sensory profile, the worked formulations, set out alongside them for anyone who wanted to verify the claim themselves.

I also contributed the supporting formulations included in the datasheet, such as a simple one-pot skin cream and a no-lye relaxer stable at pH 13-13.5, so the ingredient's benefits were demonstrated in realistic, ready-to-use starting points rather than left as abstract performance data.

Results and market value

The finished product entered the market with a genuinely differentiated, evidence-backed profile: a mild, phosphate-ester emulsifying wax that performs at the usage levels and temperature ranges formulators need, is compatible with the difficult actives that routinely break incumbent systems, and simplifies manufacturing to a single pot, a meaningful advantage for cost-sensitive and emerging-market production. For the business, that combination opened a broader set of applications, from sensitive skin and baby care through to medicated body care and hair relaxers, on the strength of substantiated, head-to-head data rather than incremental positioning against the category.

Skills demonstrated

- **Product strategy:** setting a target product profile from a market gap
- **Study design:** building comparative, claims-ready efficacy studies
- **Data analysis:** interpreting mildness, stability and rheology datasets
- **Claims substantiation:** matching evidence strength to marketing language
- **Technical writing:** producing a datasheet for a technical, scrutinising audience
- **Cross-functional leadership:** bridging synthesis, R&D and marketing
- **Commercial translation:** converting lab results into customer benefits
- **Formulation science:** one-pot process design for emerging markets

Key takeaways

Getting a scientific product to market isn't a handoff from R&D to marketing, it's a continuous translation exercise, run in both directions, from the first target product profile to the final line on the datasheet. The strongest claims in the Crodex M launch weren't discovered after the fact; they were designed for, tested against a real incumbent, and quantified before a single word of copy was written.

That's the capability I bring to consulting engagements: the ability to sit between the lab and the market, set technical direction that a commercial strategy can actually stand on, and turn scientific data into language a customer will believe.