

Stem Cell Therapy without the Stem Cells: Additional Support for Therapeutic Application of Platelet Lysates

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Abstract: *Platelet lysates supply platelet-derived biological signals without administering viable stem cells. This AI-assisted narrative investigation evaluates additional support for the Drake-Hicks hypothesis through research using ChatGPT and Google Gemini, comparison of their outputs, and verification of original publications. The findings encompass product characterization, experimental neurological applications, human wound healing, and ocular surface treatment. Studies demonstrate biological activity without transplanted stem cells, although preparations, delivery routes, and evidentiary strength differ. A small double-blind diabetic foot ulcer study reported healing in nine of ten lysate recipients compared with none of nine platelet-poor plasma recipients by day 84. A larger open-label study of topical umbilical cord blood lysate gel also reported greater complete healing than control dressings. Ocular investigations provide additional support for local applications, including treatment of tissue manifestations in patients with an autoimmune condition. Experimental processing studies show that functional activity and procoagulant characteristics depend on preparation methods. The evidence supports platelet-derived preparations as therapeutic candidates without establishing equivalence to cellular therapies or intravenous effectiveness for systemic autoimmune disease. Platelet lysates merit investigation as therapeutic products in their own right, with the strongest verified human support in the local applications examined here.*

Keywords: platelet lysate; regenerative medicine; cell-free therapy; diabetic foot ulcer; ocular surface

1. Introduction

Platelet lysates offer a means of administering platelet-derived biological signals without transplanting viable stem cells. Drake and Hicks's report on high-dose light-activated platelet rich plasma provides the conceptual starting point for this investigation. (1) The question is whether evidence from other platelet-derived preparations supplies additional support for a broader regenerative proposition. That question can be answered constructively without assuming that all platelet products are identical or that every proposed application has already been established.

The phrase "stem cell therapy without stem cells" expresses a hypothesis about therapeutic signaling. It invites investigation of whether some benefits sought through regenerative treatment can arise from an administered preparation that supplies biological factors rather than transplanted cells. The phrase should not be read as a literal description of a stem cell product. A lysate does not become a stem cell therapy merely because its ingredients influence repair. The scientifically useful interpretation concerns functional effects: which outcomes can occur without transplantation, under what conditions, and with what degree of supporting evidence?

For this paper, platelet lysate refers to a preparation in which platelets are deliberately disrupted to release their contents. Platelet-rich plasma, activated platelet releasate, and processed lysate are related but distinct preparations. A clinical claim about one product cannot be assigned to another solely because both originate from platelets. This distinction is especially relevant to the originating light-activated PRP hypothesis. Evidence from freeze-thaw lysates or processed platelet pellet preparations can

support the general importance of released factors while leaving the specific light-activated formulation in need of direct evaluation.

A further distinction concerns the meaning of cell-free treatment. The absence of transplanted stem cells does not imply that the recipient's own cells play no role. Repair may involve surviving tissue cells, resident progenitors, inflammatory cells, or vascular cells. The proposition examined here is compatible with biological effects mediated through those endogenous populations. It asks whether the administered platelet-derived material can influence a repair response without itself supplying viable stem cells. That is a narrower and more testable claim than the suggestion that repair occurs independently of cellular biology.

Framing the evidentiary question

Three propositions organize the investigation. First, a platelet lysate must contain biologically active material capable of changing a relevant experimental response. Second, administration of a defined preparation must improve an outcome in an animal model or a human treatment setting. Third, the preparation must be sufficiently characterized to support interpretation of its performance and safety. These propositions are connected, but evidence for the first does not automatically establish the second or third. The existence of a growth factor is a rationale for testing a product, not a substitute for an outcome study.

The central hypothesis can therefore receive support at several levels. Laboratory evidence can establish plausibility. Animal evidence can demonstrate an effect in a living injury model. Human evidence can show whether an intervention changes a clinically relevant

outcome. Each level answers a different question. A positive laboratory result is valuable even when human efficacy remains unknown; a positive local clinical result is valuable even when systemic delivery remains untested. Recognizing these differences allows the paper to identify affirmative evidence without overstating its reach.

Administration route is a particularly important boundary. An eye drop contacts the ocular surface; a perilesional injection places material near a wound; an intranasal preparation is studied through another delivery pathway. An intravenous preparation enters the circulation and raises additional questions about distribution, exposure, and vascular compatibility. Calling all these interventions “platelet therapy” conceals the differences that determine whether evidence is transferable. This paper consequently treats route as part of the identity of the therapeutic intervention.

Study design also affects what can reasonably be inferred. A controlled comparison helps distinguish a treatment signal from changes that might have occurred with usual care or time. A case series can identify promising outcomes but has less capacity to attribute them to the product. An experimental model can reveal a response under controlled conditions while remaining different from chronic human disease. These are interpretive distinctions rather than reasons to disregard early evidence. Their value is to locate each finding within a cumulative research program.

The purpose of this paper is to identify and evaluate additional support for regenerative therapy without transplanted stem cells through the therapeutic applications of platelet lysates.

2. Methods

The Artificial Intelligence models ChatGPT (<https://chatgpt.com/>) and Google Gemini (<https://gemini.google.com/>) were utilized to investigate evidence supporting therapeutic applications of platelet lysates under the AIM framework of Actor, Input, and Mission. The Actor directed each system to function as a biomedical researcher specializing in regenerative medicine and platelet biology. The Input supplied the Drake-Hicks hypothesis and distinguished platelet lysates and released platelet-derived factors from conventional platelet-rich plasma. The Mission requested a broad investigation of indexed scientific literature and gray literature, including animal studies, human clinical studies, case reports, international reports, practitioner observations, testimonials, conference presentations, and videos, with particular attention to systemic and intravenous applications.

Substantially equivalent research requests were used with both systems. Their outputs were compared for overlapping evidence, unique findings, preparation types, administration routes, reported outcomes, and completeness of supporting citations. Sources identified through this comparison were organized by scientific

subject for a blended Results section. Targeted ChatGPT-assisted searches were then used to locate original publications and bibliographic records and check whether each source supported the specific preparation, route, population, and outcome described.

The Gemini document supplied an exact follow-up prompt for obtaining documentation of claims that lacked identifiable sources. The prompt was prepared for submission in the original Gemini conversation:

“For your previous statements regarding positive effects from systemic animal studies, international clinic experiences, CRP reductions, autoimmune applications (such as rheumatoid arthritis and systemic sclerosis), and the absence of thrombotic/pulmonary complications, please specify the exact sources for your positions. Where are these positive studies found (e.g., peer-reviewed journals, preprints, foreign clinical reports, conference proceedings, practitioner websites, news articles, or white papers)? Confirm all positive statements of therapeutic effect with a specific reference, author/organization, year, or verifiable source link for each claim.”

The supplied Gemini document contained this prompt and a proposed manuscript outline, but no claim-by-claim response identifying the requested sources. Consequently, receipt and verification of those citations were not recorded as completed research steps. The integrated paper incorporated therapeutic findings supported by identifiable documentation and retained the remaining systemic claims as leads requiring the Gemini follow-up and review of the underlying sources.

For the expansion of this manuscript, ChatGPT-assisted searches were extended to original investigations of lysate composition, experimental stroke, keratinocyte responses, persistent corneal epithelial defects, and dry eye associated with Sjögren syndrome. Search phrases combined “platelet lysate” with these conditions and with “characterization,” “serum eye drops,” and “clinical trial.” Publication titles, author records, dates, and digital object identifiers were checked where available. The expanded material was incorporated into the same subject-based synthesis used for the earlier findings.

During comparison, the AI-generated statements were examined as individual claims rather than accepted as a complete account. The product named in a source was compared with the product described in the output, and the administration route was checked separately. Clinical and preclinical reports were distinguished, and a publication describing platelet lysate in a culture medium was not treated as a trial of lysate administered alone. Related case reports and a subsequent trial were identified as potentially overlapping evidence rather than counted automatically as independent confirmation.

The search and comparison remained a narrative AI-assisted process. No prespecified systematic-review protocol, comprehensive database export, duplicate independent screening, formal risk-of-bias scoring, or meta-analysis was performed. The available materials

did not provide a complete reproducible transcript of every original prompt. The exact Gemini follow-up reproduced above was retained as supplied; representative descriptions of the broader AIM requests were not presented as verbatim historical transcripts. These distinctions describe the research steps actually documented.

3. Results

Product identity and biological composition

The verified findings show that platelet lysates are a family of preparations rather than a single invariant therapeutic substance. Delila and colleagues compared five preparations derived from the same starting platelet concentrates. Their characterization addressed proteins, growth factors, cytokines, antioxidants, proteolytic activities, extracellular vesicles, and measures of coagulation-related activity. Preparations differed in plasma proteins and functional characteristics. The comparison supports the importance of specifying how a product is made before interpreting its proposed clinical use. (Z)

This result supplies an affirmative foundation for product development. It suggests that processing can be studied as a means of obtaining a preparation suited to a particular therapeutic objective. At the same time, it prevents an overly broad inference from the name "platelet lysate." The label indicates biological origin and disruption of platelets, but does not completely identify the resulting mixture. In this synthesis, a reported benefit belongs first to the preparation actually tested.

A useful description of a therapeutic product would therefore include donor source, starting material, disruption method, processing steps, and final formulation. These details help distinguish an autologous local injection from a donor-derived gel or an extensively processed neurological preparation. They also make it possible to ask whether two investigations tested comparable interventions. The recommendation follows from the observed preparation differences; it does not imply that every manufacturing detail has already been standardized across the studies reviewed here.

Product characterization is most informative when paired with an assay relevant to the intended use. Measuring a protein concentration answers a compositional question. Demonstrating an effect in a biological assay answers a functional question. Neither alone determines clinical performance. Together they can support a plausible connection between the prepared material and an observed response. This connection is important to the hypothesis because it gives the cell-free preparation a measurable identity rather than treating regenerative activity as a property inferred from its origin.

From molecular content to functional evidence

Nebie and colleagues characterized a heat-treated human platelet pellet lysate containing more than 1,000 proteins,

including components associated with growth, neuronal support, and antioxidant activity. In two mouse models of traumatic brain injury, topical cortical treatment followed by intranasal administration improved motor outcomes and reduced inflammatory and oxidative injury measures while preserving synaptic proteins. The experiment linked composition with a living-system response, providing preclinical support for therapeutic activity without transplanted stem cells. (s)

The important contribution is the sequence from a characterized preparation to measurable outcomes. An account that stopped at the presence of proteins would remain primarily a rationale. The animal experiments supplied an additional level of support by showing a response after administration. Nevertheless, the evidence belongs to mouse injury models and the delivery regimen studied. It does not establish that a patient receiving an intravenous lysate would experience the same exposure or benefit.

The interpretation of a complex mixture requires particular care. Finding several potentially relevant constituents does not establish that each is necessary, that all act in the same direction, or that the highest concentration of one factor produces the best result. The administered product may function through combinations of components. This paper does not assign the neurological effects to a single molecule. The study instead supports the activity of the tested preparation as a whole.

A practical implication is that development should consider both composition and performance. If two batches contain similar quantities of selected growth factors but behave differently in a relevant assay, the measured factors may not capture all features responsible for activity. Conversely, different compositions may produce similar outcomes in a particular test. These are questions for product evaluation. They help explain why a therapeutic hypothesis centered on platelet-derived signals should be examined through defined preparations rather than through a list of favorable ingredients.

Neurological evidence and endogenous repair

Hayon and colleagues studied platelet lysate after experimental stroke in rats. Lysate was administered into the lateral ventricles following permanent middle cerebral artery occlusion and compared with platelet-poor plasma and a growth-factor comparator. The investigators reported improved functional recovery, reduced injury, and findings consistent with angiogenesis and endogenous neural progenitor responses, including later neurogenesis. This is another preclinical demonstration of a platelet-derived intervention without transplantation of stem cells. Its intracerebroventricular route is essential to interpretation. (4)

The stroke study makes the distinction between transplanted and endogenous cells especially useful. The preparation can be described as administered without stem cells even when the response includes the recipient's

own progenitor populations. The hypothesis therefore does not require a choice between cell-free signaling and cellular repair. A platelet-derived intervention may supply signals while host cells participate in the resulting response. This is a conceptual interpretation of the experimental finding, not evidence that every lysate recruits the same endogenous mechanisms.

The neurological studies broaden the hypothesis beyond surface wound closure. They suggest that platelet-derived preparations can affect outcomes relevant to injured nervous tissue in controlled experimental settings. Their contribution is strongest when the model, timing, formulation, and route remain visible. The diversity of models gives the research program breadth, but does not erase the limitations of translating an experimental injury to a human neurological condition.

Several translation questions follow. A clinical investigation would need to identify which patients are biologically comparable to the experimental setting, how the preparation reaches the intended tissue, and which functional outcome matters to those patients. It would also need to evaluate an acceptable delivery method. Those questions cannot be answered by transferring the favorable result alone. The animal findings instead supply a reason to pursue a defined translation pathway and a set of measurable effects that subsequent research can examine.

Processing, extracellular vesicles, and retained activity

Delila and colleagues evaluated a heat-treated lysate subjected to nanofiltration. The resulting product was depleted of extracellular vesicles and showed reduced phosphatidylserine related procoagulant activity while retaining neuroprotective effects in neuronal models and anti-inflammatory activity in an intranasal mouse injury model. This experiment supports the possibility of modifying a platelet-derived mixture without necessarily losing the activity relevant to its tested application. It also identifies processing variables that matter to safety evaluation. (5)

The finding has two distinct implications. First, the biological effect did not require preservation of all the starting material's vesicle content in the models tested. Second, a change in a coagulation-related laboratory measure can be achieved through processing. Neither implication should be generalized beyond its evidence. The result does not show that extracellular vesicles are irrelevant to every indication, and it does not establish the clinical safety of an intravenous product.

This distinction is useful for affirmative development of cell-free therapies. A preparation can be improved by identifying which characteristics support the desired effect and which introduce an avoidable concern. That approach treats lysate as an engineerable biological product. It differs from assuming that the least processed mixture is always optimal or that removal of material inevitably weakens therapeutic activity. The observed retention of activity makes the relationship between

processing and performance a productive research question.

The words used to describe safety must remain precise. Reduced procoagulant activity is a laboratory observation. Absence of a reported event in a small clinical study is an observation about that study. Demonstrated safety for a new route requires direct evaluation of that route and product. Keeping those statements distinct allows the nanofiltration work to contribute meaningfully to the paper without turning a promising experimental feature into an unsupported assurance.

Human evidence: perilesional diabetic foot ulcer treatment

The strongest verified human wound evidence in the earlier AI comparison was the prospective double-blind study by Alhawari and colleagues. Nineteen patients received perilesional autologous platelet lysate or platelet-poor plasma. Nine of ten lysate recipients healed, with a reported mean healing time of 5.1 days, whereas none of nine comparison recipients had healed by day 84. Local injection pain occurred, but no major adverse events were reported. The result provides a substantial treatment signal within a small local-treatment study. (6)

The comparator is important to the logic of the hypothesis. A comparison with platelet-poor plasma asks whether the platelet-derived preparation adds an effect beyond the plasma-based comparison under the conditions studied. It is more informative for that question than a report of improvement with no comparison group. The difference in healing supports attention to released platelet contents as potentially active therapeutic material.

The size of the observed difference should not obscure the small number of participants. A small trial can produce an encouraging signal while leaving considerable uncertainty about how consistently the result would appear in other patients or treatment settings. The appropriate conclusion is support for the tested intervention and a rationale for further confirmation. It is not a claim that a particular healing proportion will apply to every future population.

Clinical interpretation also depends on what the trial outcome represents. Wound closure is a meaningful result, but the broad category of diabetic foot disease includes questions beyond initial closure. A later study could separately evaluate durability, recurrence, function, and patient experience. These are proposed extensions of the research question, not outcomes attributed to this trial. The present paper uses the reported healing outcome as direct evidence of local therapeutic activity and avoids assigning unmeasured long-term benefits.

Early clinical reports and related laboratory observations

Jafar and colleagues reported two longstanding diabetic

foot ulcer cases treated with perilesional lysate, with complete healing within eight weeks. The accompanying laboratory work examined primary epidermal keratinocytes and found enhanced chemotaxis and migration, while proliferation was inhibited under the conditions studied. The publication provides an early clinical observation and a mechanistic lead. Because these cases were related to the developing clinical program, they should not automatically be counted as an independent replication of the later trial. (7)

The keratinocyte finding refines the meaning of regenerative activity. A favorable response need not consist of increasing every measured cellular process. In this experiment, movement-related responses and proliferation did not change in the same favorable direction. It would therefore be inaccurate to summarize the work as showing a universal increase in cell growth. The more useful conclusion is that the preparation affected particular aspects of cell behavior relevant to the authors' wound-healing investigation.

This observation illustrates why broad descriptions such as "regeneration" should be unpacked into outcomes. Migration, survival, inflammatory response, matrix organization, and proliferation are separate biological questions. A preparation may influence one process differently from another. A manuscript that records those differences can explain the evidence more effectively than one that labels every positive finding as stimulation of growth.

The clinical cases also illustrate the role of early reports in an evidence sequence. They can show feasibility, generate hypotheses, and help identify outcomes worth testing. A controlled trial then asks a more demanding causal question. Presenting the two publications as related stages respects both contributions while avoiding an inflated impression of the number of independent confirmations. The support for lysate therapy is strengthened by an accurate account of the research sequence.

Human evidence: topical umbilical cord blood lysate gel

Lambadiari and colleagues investigated a topical gel made from umbilical cord blood platelet lysate in an open-label randomized diabetic foot ulcer study. The trial enrolled 110 participants. Among the P6 who completed follow-up, complete healing was reported in 55.s% of lysate-treated patients and 16.s% of controls receiving saline dressings. The study extends the human wound-healing evidence to a different source and formulation, while its open-label design and incomplete follow-up remain important interpretive limitations. (8)

The result is useful because it demonstrates that the human evidence is not confined to one small perilesional study. It does not, however, constitute a direct replication using the same product. The donor source, topical gel formulation, comparator, and delivery differ. This paper treats the studies as convergent support for selected

platelet-derived wound applications, rather than as proof that their products are interchangeable.

The reported healing proportions also require the correct denominator. They describe those completing follow-up, not simply all randomized participants. Attrition can affect interpretation if outcomes among those not completing differ from outcomes among completers. The available finding remains favorable, but it should be represented using the population to which the published proportion applies. Preserving that detail prevents a stronger inference than the reported data justify.

The two wound studies together support a bounded clinical proposition: a locally applied platelet lysate can contribute to healing in particular studied diabetic ulcer settings. They do not answer a head-to-head question about the best source or delivery method. Such a comparison would require a study designed for it. The present evidence instead supplies a basis for defining candidate interventions, clinically relevant outcomes, and the conditions under which further comparative work would be informative.

Ocular surface treatment: persistent epithelial defects

Abu-Ameerh and colleagues evaluated autologous platelet lysate eye drops in a pilot study of ten patients with persistent corneal epithelial defects. The preparation was made using repeated freeze-thaw processing and administered four times daily. Seven patients achieved healing within Z8 days, including four within 14 days, and the investigators reported no attributed adverse events. This small uncontrolled study supplies another human signal of local therapeutic activity without administration of viable stem cells. (P)

The ocular application broadens the evidence while preserving a clear route boundary. The intervention was placed directly on a tissue surface and evaluated in a defined local disorder. It demonstrates neither systemic exposure sufficient to treat distant organs nor correction of an underlying systemic disease. Its relevance to the hypothesis is that a cell-free platelet-derived preparation was associated with an observable repair outcome at the site of application.

The uncontrolled design limits causal interpretation. Improvement after treatment can be compatible with an effect of the preparation, but does not by itself exclude other influences. A controlled comparison would help clarify how much healing can be attributed to lysate under similar treatment conditions. This limitation does not erase the clinical observation; it determines its place in the evidence sequence.

The ocular and wound findings also show why patient outcomes should be tailored to the tissue under study. Closure of an epithelial defect and closure of a diabetic ulcer are both repair outcomes, but they arise in different anatomical and clinical contexts. They should not be pooled as though they measured an identical intervention effect. Their combined contribution is conceptual

breadth: platelet-derived local treatments have been investigated in more than one human tissue setting.

Ocular manifestations of autoimmune disease

Fea and colleagues studied autologous platelet lysate eye drops in patients with primary Sjögren syndrome and dry eye refractory to standard therapy. Thirty patients were enrolled, with twenty receiving lysate and ten receiving artificial tears over PO days. The study reported improvement in subjective symptoms and selected objective ocular measures in the lysate group compared with the comparison group. This supports a local application in patients with an autoimmune condition, without demonstrating treatment of the systemic autoimmune disease itself. (10)

This distinction helps resolve an ambiguity in broad AI-generated claims about autoimmune applications. A statement that lysate benefited “autoimmune patients” may refer to a local manifestation rather than alteration of the systemic disease process. The condition of the patient and the target of the intervention must both be recorded. Here, the verified target was the ocular surface. The finding is positive and relevant, but cannot substantiate an intravenous claim about rheumatoid arthritis or systemic sclerosis.

The study therefore adds affirmative evidence while sharpening the hypothesis. It indicates that cell-free platelet-derived material can be investigated for a clinically important manifestation in a difficult patient population. It does not establish that the preparation changes systemic disease activity or permits changes to systemic therapy. Those would be separate research questions requiring separate outcome measures.

More generally, the relationship between local tissue support and disease modification deserves explicit attention. A patient can benefit from improved symptoms or tissue condition even when the initiating disease remains present. Such a benefit is therapeutically meaningful.

Defining it accurately prevents the manuscript from treating all improvements as cures and allows the evidence to support the application actually evaluated.

Comparative biological activity of ocular preparations

Zhang and colleagues compared platelet lysate with autologous and allogeneic serum preparations intended for eye-drop use. Lysate contained higher levels of several measured growth factors but lower levels of other constituents. The laboratory comparison found no significant difference in proliferation and comparable wound-healing activity relative to the serum preparations. The study is valuable because it shows that a richer concentration of selected factors does not necessarily establish superior performance in every functional assay. (11)

This comparison supports a balanced interpretation of platelet-derived mixtures. A therapeutic rationale may

point to factors associated with repair, but evaluation must still ask whether the complete preparation performs as intended. Selecting only constituents that favor one product can conceal features that favor another. The study encourages examination of the mixture and its function rather than an assumption of superiority based on a few measurements.

For the central hypothesis, comparable laboratory activity can still be informative. The claim under investigation is whether platelet-derived material can produce relevant effects without transplanted stem cells, not whether it invariably outperforms every alternative. A result showing activity without universal superiority supports the narrower proposition. Distinguishing activity from superiority prevents the manuscript from demanding too little evidence for efficacy or too much evidence for biological plausibility.

The ocular studies consequently form an internally varied evidence group. They include a small healing pilot, a clinical comparison in Sjögren-associated dry eye, and a laboratory comparison of blood-derived formulations. Each contributes to a different question. Taken together, they supply a reason for further defined local studies while illustrating why product selection should depend on the intended outcome and comparative evidence.

Systemic claims and the importance of intervention classification

The targeted verification did not establish the earlier AI-generated claims of intravenous platelet lysate benefits in rheumatoid arthritis or systemic sclerosis, quantified reductions in C-reactive protein, or international clinical series without pulmonary or thrombotic complications. These remain research leads. The supplied Gemini document requested exact supporting sources but did not include the response. The absence of a verified source in the materials examined does not prove that no such report exists; it means the claim cannot be treated here as an established finding.

A systemic sclerosis search identified the MANUG trial protocol, which concerns intramuscular administration of allogeneic mesenchymal stromal cells for digital ulcers. Platelet lysate appears as a supplement used during cell expansion. The administered intervention is cellular, so this protocol is not evidence that lysate alone treats systemic sclerosis. It provides a concrete example of why the role of a material in a study must be distinguished from the identity of the treatment. (12)

Three categories can be confused in an AI-assisted search: platelet lysate used to culture cells, lysate used as a direct therapeutic preparation, and conventional platelet-rich plasma used as an intervention. The presence of the same phrase in a publication does not make these categories equivalent. A paper may be relevant to platelet biology while failing to support a claim about lysate administration. Classification is therefore part of factual verification, not merely a stylistic preference.

The original Drake–Hicks report remains the starting point for the hypothesis and a source of clinical leads.

(1) Practitioner accounts and international reports may help identify observations that warrant investigation.

Their contribution depends on documentation that allows a reader to reconstruct the product, route, patient condition, concurrent treatment, outcome, and follow-up. Without that information, an encouraging account cannot be weighed in the same way as a traceable clinical study.

Route-specific safety and therapeutic interpretation

The evidence supports evaluating safety at the level of the actual preparation and route. Local wound and ocular studies provide observations about their own treatment settings. The neurological processing study supplies laboratory and preclinical findings about a modified product. None supplies a direct demonstration that an intravenously administered preparation is free of thrombotic or pulmonary complications. A favorable local safety observation should be retained, but its interpretation should remain local.

Removing transplanted cells answers one question about what is administered; it does not fully characterize the resulting mixture. Residual vesicles, proteins, formulation components, and other material may still matter to performance. The nanofiltration and preparation-comparison experiments make this point concrete by measuring differences that survive the general label of cell-free therapy. (Z, 5) The relevant inference is that safety assessment should address the final product rather than rely on the absence of viable stem cells alone.

Several questions would need direct answers before extending the hypothesis to intravenous use. The product would need a defined composition and a justified dosing regimen. Its interaction with blood and its distribution after administration would need evaluation. Outcomes would need to be connected to a specified disease and measured prospectively. These are proposed requirements for investigating an unresolved application, not a report that such a development program has been completed.

Safety and efficacy also remain separate propositions. A preparation could be tolerated without providing meaningful benefit; it could show biological activity while requiring further work on administration. The paper therefore avoids using an absence of reported adverse events as proof of effectiveness or using a favorable efficacy signal as proof of broad safety. That separation makes the positive findings more useful because it identifies the questions each one actually answers.

Integrated support for the hypothesis

The blended evidence supports the hypothesis through several complementary observations. Defined lysates contain biologically active mixtures. Experimental neurological investigations report effects without transplanted stem cells. Human local studies report

healing or ocular improvement with platelet-derived preparations. Processing research shows that activity and coagulation-related properties can be evaluated and modified. These findings provide substantive support for platelet lysates as therapeutic candidates in their own right. (Z, s, 4, 5, 6, 8, P, 10)

The support is strongest for the proposition that some therapeutic effects can occur without stem cell transplantation. A stronger proposition- that lysates reproduce the full therapeutic function of stem cells across conditions- is not established by these studies. A still more specific proposition- that a particular intravenous light-activated formulation effectively treats systemic autoimmune disease- requires direct evidence not supplied by the verified local and experimental literature examined here. Separating these propositions prevents uncertainty about the strongest claim from obscuring support for the narrower one.

The evidence is also cumulative without being uniform. The diabetic foot and ocular investigations demonstrate relevance to patients; the animal investigations examine responses in controlled injury models; product studies explain why preparation details matter. No single publication answers every question. The value of synthesis is to show how these contributions relate while preserving differences in design, route, and outcome.

The next stage of the hypothesis can be framed as a series of testable questions. Which defined preparation is most appropriate for a selected indication? Does its activity persist across reproducible batches? Does a controlled human study confirm the early treatment signal? If a new route is proposed, does the same preparation reach the intended tissue and retain an acceptable safety profile? These questions extend the affirmative findings toward clinical development rather than treating a general regenerative concept as a completed therapeutic validation.

4. Discussion

The evidence examined in this paper advances the hypothesis that platelet-derived preparations can produce selected therapeutic effects without transplantation of viable stem cells. Experimental neurological studies and human investigations of wound healing and ocular surface treatment provide support beyond the presence of potentially beneficial growth factors. (s, 4, 6, 8–10) Collectively, these findings support platelet lysates as therapeutic candidates in their own right. The phrase “stem cell therapy without stem cells” is therefore most defensible as a functional proposition: administered platelet-derived signals may support repair through the recipient's own cells. It does not establish that platelet lysates reproduce every function or clinical benefit of transplanted stem cells.

The extent of this support depends on the preparation, administration route, and outcome studied. Investigations of different lysates demonstrate that processing influences composition and functional activity. (Z, 5)

Consequently, favorable results from a topical gel, ocular preparation, or perilesional injection cannot automatically establish the effectiveness of an intravenous formulation. The verified local findings provide a foundation for further development, while systemic applications require direct investigation of a defined product, clinically meaningful outcomes, and safety under the proposed administration conditions.

The AI-assisted comparison helped identify and organize relevant evidence, but its scientific value depended on verification against original publications. Agreement between ChatGPT and Gemini did not constitute independent confirmation. The supplied Gemini follow-up requested supporting citations for systemic claims but did not contain the completed source response. Those claims therefore remain research leads. The hypothesis is meaningfully advanced by the verified evidence, while its broader systemic implications remain questions for further investigation.

5. Conclusion

Platelet lysates warrant continued investigation as cell-free regenerative therapies. The reviewed evidence supports biological activity, experimental therapeutic effects, and selected human applications involving local wound healing and ocular surface treatment. (s-10) These findings substantiate the proposition that some therapeutic effects can occur without transplantation of viable stem cells, although they do not establish universal equivalence to cellular therapies. This paper is important because it identifies verifiable evidence that platelet-derived preparations can exert therapeutic effects without transplanted stem cells and defines the evidence needed to evaluate their systemic use.

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Author Profile

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