X-pure GelMA

REDUCING TIME TO CLINIC FOR YOUR BIOMEDICAL APPLICATION

Gelatin methacryloyl (GelMA)-based biomaterials have been widely used in various biomedical research applications due to their suitable biological properties and tunable physical characteristics. Over the past 5 years, GelMA-oriented research and patent applications have been growing exponentially, and many of these research concepts are now being translated towards the clinic.
However, standard GelMA products often carry high and variable levels of soluble impurities originating from either the gelatin raw material or the chemical synthesis process. The presence of these impurities such as endotoxins and/or MA residues are detrimental for in-body use but can also affect the success of *in vitro* applications.

This infographic describes the benefits of GelMA in various biomedical applications and how X-Pure® GelMA can help you in your developments.

GelMA, an adjustable and versatile mimic of the extracellular matrix

Gelatin methacryloyl (GelMA) is a polymerizable hydrogel material derived from collagen, a component of the extracellular matrix (ECM).
In GelMA hydrogels, the inherent biodegradability, and cell compatibility of gelatin are combined with the tailorability of methacryloyl-dependent photo crosslinking.

This combination holds a huge potential for the creation of tunable biological environments for the culture of various eukaryotic cells at body temperature.

2000-2019: GelMA in research

Published articles
x800
(from 3 to 2.500)

Published patents
x100
(from 1 to 100)

Source: https://scholar.google.com/

Advancing medical science

Rousselot Biomedical

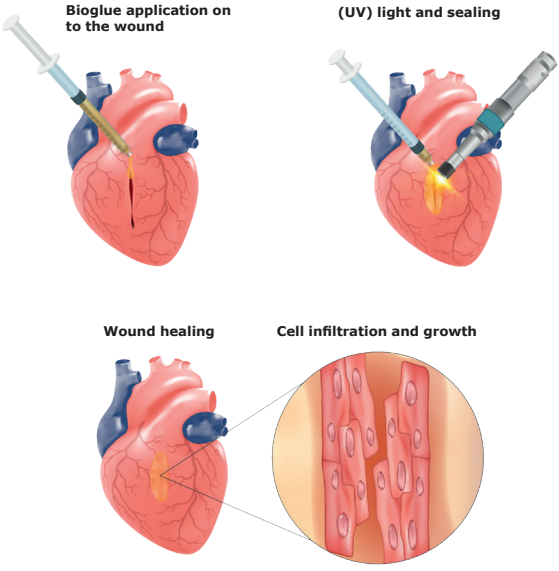
DARLING INGREDIENTS

A huge potential for GelMA-based biomaterials

Examples of applications

GelMA for Wound Healing

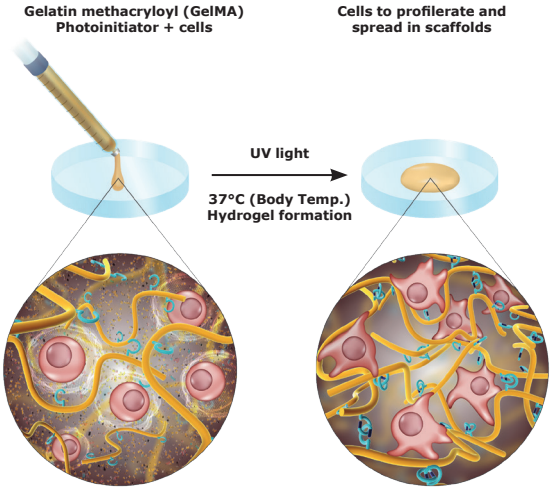
GelMA excels as Bioglue as it offers strong adhesion to wet soft tissues.



Depicted here is GelMA at work to control heart bleeding from cardiac penetration wounds (Hong et al. 2019).

GelMA Hydrogels for 3D Bioprinting

GelMA based hydrogels are perfectly suited for 3D culture systems and bioapplications.

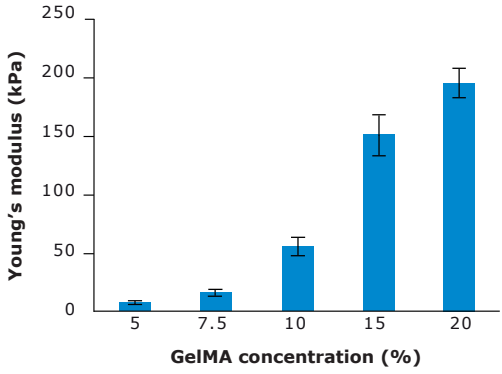


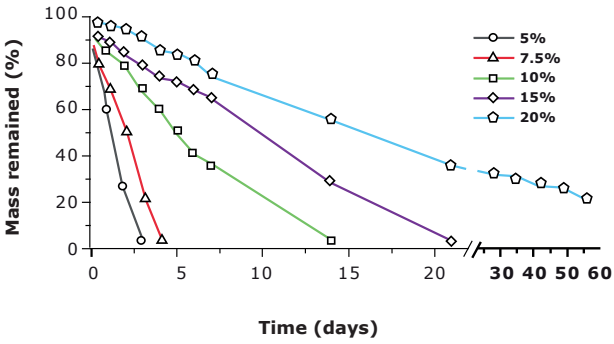
Other examples of (Pre-) clinical applications include:

- Bioadhesives
- Drug/ Gene/ Growth Factor Delivery
- Tissue engineering
- Biology-on-a-chip

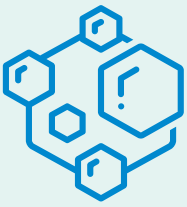
Examples of the tunability of GelMA's physical characteristics.

The mechanical and degradation properties of GelMA hydrogels can be readily tuned by varying GelMA concentrations.





Compressive and elastic moduli are tunable from a few kPa to a few hundred kPa, and degradation times can be varied from a few days to several months.



This tunability makes GelMA hydrogels equally suitable as a bioink ingredient for **cell culture** or as a **long-term wound healing solution**.

Source: Xin Zhao et al., Photocrosslinkable Gelatin Hydrogel for Epidermal Tissue Engineering Adv. Healthcare Mater. 2015, DOI: 10.1002/adhm.201500005

The origin and impact of endotoxins and residual methacrylic acid:

Precursor

- The precursor gelatin (endotoxin)
- The chemical synthesis process (methacrylic acid)

Can be

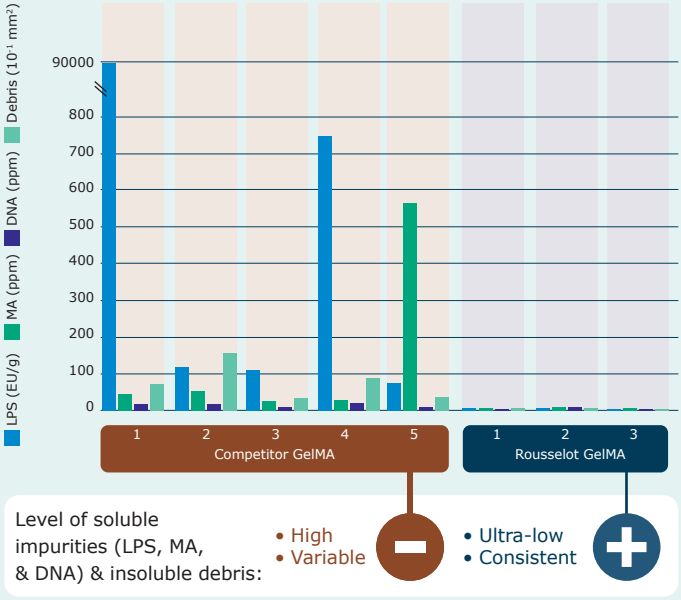
- High level
- Not specified
- Inconsistent

Affect

- Both *in vitro* & clinical applications of GelMA biomaterials

X-pure GelMA

The first GMP*-ready gelatin methacryloyl with ultra high purity levels



Pellets after centrifugation of 1-ml of 8% w:w solutions

X-Pure GelMA supports your full pharmaceutical developments:

- ☑ Guaranteed consistent ultra-low levels of impurities, such as endotoxins, methacrylic acid and insoluble debris
- ☑ Consistent manufacturing process
- ☑ Consistent batch-to-batch quality
- ☑ Tailored, controlled and consistent mechanical properties
- ☑ Committed to the highest quality and safety
- ☑ Full and validated traceability of raw materials
- ☑ Supporting documentation requirements for filings
- ☑ Research and GMP* grade products meet the same strict set of specifications
- ☑ Scalable production process

Rousselot® X-Pure® GelMA: Broad range of molecular weights and modification degrees

	MW (kDa)	DoM (%)	Endotoxin level (EU/g)	MA (ppm)
X-Pure GelMA 160P40	160	40	<10	<30
X-Pure GelMA 160P60	160	60	<10	<30
X-Pure GelMA 160P80	160	80	<10	<30
X-Pure GelMA 90P60	90	60	<10	<30
X-Pure GelMA custom	Customisable	Customisable	<10	<30

Research grades: 1-100 g
GMP grade: available upon request

* IPEC – Excipient Good Manufacturing Practices Guide, 2017 as of 2021

© Rousselot BV - Pictures: Rousselot - Design: agence-pw.fr - 11-2020 - V1.0

Rousselot Headquarters
Rousselot B.V.
Kanaaldijk Noord 20
5691 NM Son The Netherlands
+31 499 364 100
biomedical@rousselot.com

@RousselotBio
Rousselot
gelma.com
rousselot.com/biomedical

Rousselot Biomedical

DARLING INGREDIENTS