

# Peptones: established supplements for vaccine applications

Vaccine development can be complex and expensive. Improving your development process—from cell growth to viral production—through reduced costs and increased efficiencies may, therefore, be vital for your success.

Peptones can offer a solution. Rich in amino acids, peptides, vitamins, carbohydrates, nucleosides, minerals, and other components, peptones are well suited for use as supplements and feeds. These versatile, low-cost supplements can also be used as an alternative to serum,

with the ability to enhance performance while offering cellular protective effects. Having played an important role in viral vaccine development for many decades, peptones continue to have the potential to help your vaccine get to market more efficiently and cost-effectively.

To help you learn more about the potential that peptones hold, we've outlined four ways that peptones could benefit your vaccine development processes.



### An alternative to serum

While serum has traditionally been used to achieve adequate production levels in mammalian cell culture, challenges associated with the use of sera are leading vaccine developers to look for alternatives. These challenges can include limited availability, changing supply, fluctuating costs, and lengthy ordering processes. In addition, animal-derived sera can add significant risk to your vaccine development process, with the potential for contamination with adventitious agents and pathogens.

As such, there is a growing trend within the bioprocessing industry to remove and replace serum when possible. As a nutrient-rich supplement, peptones offer a particular benefit and have been shown to increase performance in a variety of vaccine applications. In addition, with animal origin-free options available, peptones can reduce the risk factors associated with products derived from animals, an important consideration when developing animal vaccines in particular. Serum all too often drives up costs associated with vaccine development, so selecting an alternative supplement with low cost volatility can be an essential first step.

Outsourcing your media manufacturing, or qualifying a secondary or tertiary supplier, has the potential to alleviate some of these pressures. At times of unpredictability, having access to additional capacity is paramount to risk mitigation. Considering the approval of multiple sites or

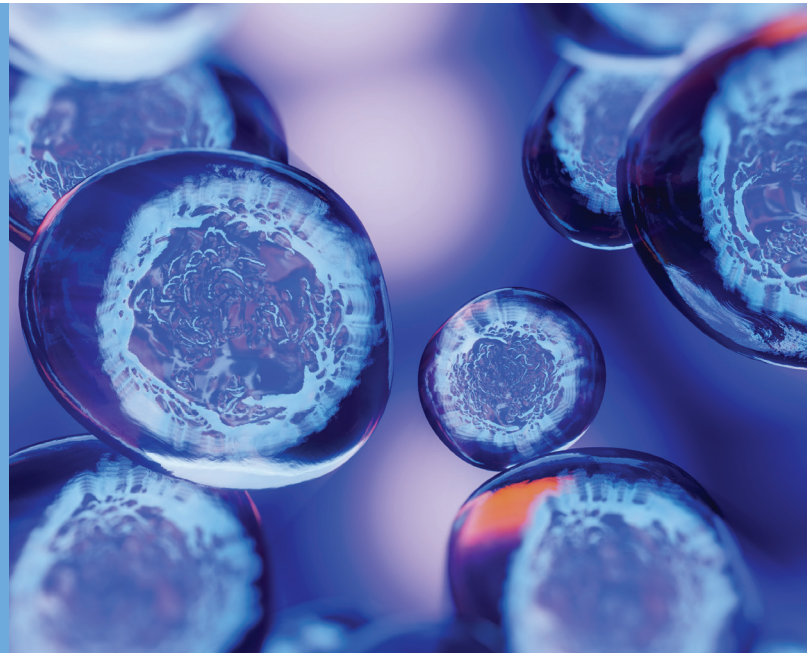
vendors for media and bulk process liquids may be your best bet. In fact, strategic outsourcing may become an essential way for manufacturers to produce biologics that are related or unrelated to SARS-CoV-2 over the next few years.

### Versatile and flexible

Peptones can offer a versatile solution to vaccine development processes. They can be used in a number of different ways—as feeds or supplements, to support serum reduction, or as a serum replacement. Peptones are also varied in their origin and composition, with some derived from animals, such as casein, others from plants, e.g., soy and wheat peptones, and some from microbial sources, such as yeast. As a result, this wide variety of peptones, all with differing nutritional profiles, can be used for a broad range of process types (batch, fed-batch, and perfusion), cell types, and applications to achieve target viral titers. In addition, peptones are highly stable, with a long shelf life, and can easily blend into any medium or supplement, whether in liquid or dry powder format. Ultimately, peptones can allow for more flexibility in your process, particularly when compared with serum.

However, this versatility also means that peptones should be selected carefully based on bioprocess requirements. As the nutritional requirements of cell lines can differ, it is important to identify a peptone that meets the requirements of your particular cell line.

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### Improve process productivity

When developing a vaccine, you will be continually looking for ways to increase process productivity while simultaneously reducing the per-unit cost of your vaccine. As such, there should be a strong focus on the optimization of cell culture media, feeds, and serum substitutes that have the potential to drive down your costs.

Peptones can enhance performance and help reduce the process development timeline. Supporting high performance and process consistency, peptones can enhance cell growth and sustain viral titers.

### Peptones are familiar to regulators and suppliers

There are numerous vaccines on the market that utilize peptones in their manufacture, including the hepatitis B vaccine. As a result, both suppliers and regulators are experienced in the use of peptones for vaccine development. Gibco™ peptones, for instance, are currently used in the manufacture of more than 150 marketed drugs, including 15 blockbuster drugs and many more in the pipeline. Ultimately, this familiarity from regulators should help streamline the vaccine filing process.

While peptones offer many benefits when compared with sera, not all peptones are created equal and will offer different benefits across bioprocesses. Historically, peptones were manufactured for the food industry as nutritional additives and flavor enhancers. When considering peptones, choosing those that have been manufactured and tested specifically for bioprocessing applications will be critical for maintaining consistency from batch to batch.

Your supplier can help select the optimal peptone scheme for your specific process, with recommendations based on libraries of data and past experience working with customers to develop ideal solutions. Finding the right balance for your cells can be a challenge, but through screening and key driver analysis, you will be able to identify the peptones that will provide the greatest benefit. With your optimal peptone scheme identified, you can enhance performance and reduce time-to-market for your critical vaccine.

### Looking to the future

With the increasing demand for serum from the growing gene therapy market, the bioprocessing industry is anticipating a serum supply deficit in the coming years. Acceleration in serum consumption means that demand for sera will soon exceed supply, causing a significant increase in serum prices.

As a result, it has never been more important to consider alternatives for your bioprocesses. Peptones, which offer a flexible, versatile, and efficient means to support vaccine development and manufacture, may be the solution to improve your processes now and into the future.

**Disclaimer:** While peptones can be used as a complete replacement for serum, at the moment this is limited to cells grown in suspension. For adherent cells, which are commonly used in vaccine production, peptones cannot substitute for serum by themselves and need to be used in combination with cell adhesion factors.

To learn more about how peptones can improve your vaccine development process, visit [thermofisher.com/peptones](https://thermofisher.com/peptones)

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