



**G-Biosciences ♦ 1-800-628-7730 ♦ 1-314-991-6034 ♦ [technical@GBiosciences.com](mailto:technical@GBiosciences.com)**

A Geno Technology, Inc. (USA) brand name

# Alum Adjuvant

(Cat. # 786-1215)



**think proteins! think G-Biosciences [www.GBiosciences.com](http://www.GBiosciences.com)**

## INTRODUCTION

Alum is widely used adjuvant for increasing the immune response. When compared to Freund's adjuvants, alum is generally less toxic and hazardous to animals as well as researchers and thus reduces the risks of lesion and other adverse inflammatory responses at the injection site. Alum is an insoluble, white colloidal suspension of aluminum hydroxide. When alum is mixed with an antigen, the antigen binds with the alum particles and becomes an insoluble antigen. Alum-antigen, when injected into animals, forms a deposit of insoluble antigen at the injection sites; rendering insoluble antigens localized for an extended period of time, hence, prolonging interaction and uptake of antigens by immune responsive cells, such as T cells, B cells and antigen presenting cells (APCs). Alum stimulates pattern recognition receptors (PRRs) as well as a Th2 immune response. However, a study in mice indicated that vaccine adjuvant causes pathological lesions on the histology sections of the liver, lung, heart, and kidney tissues<sup>1</sup>.

Antigen adsorbs to the surface of aluminum adjuvants via hydrophobic and Vander Waals forces, via electrostatic attraction and by ligand exchange<sup>2</sup>. Aluminum hydroxide is positively charged at pH6-7.5 and attracts negatively charged proteins.

G-Biosciences Alum Adjuvant preparation is premade for use without any further handling; simply mix with antigen preparation and it is ready for delivery into selected animals. Alum Adjuvant preparation is sterile and is supplied in near neutral pH and unlike other commercial preparations of alum, do not contain any preservative or any inactive agent, minimizing the risk reduced antigen-alum binding. Sonication of Alum before use breaks aggregates and reduces particles size and enhances immune response.

## ITEM(S) SUPPLIED

Cat. #	Description	Size
786-1215	Alum Adjuvant	50 ml

## STORAGE CONDITIONS

Alum Adjuvant is shipped at ambient temperature. Upon arrival store it at 4°C. The kit is stable for 1 year if used as per instruction.

## ADDITIONAL ITEMS REQUIRED

- Desired antigen either coupled to carrier protein or used as is.

## OPTIMIZATION

Before using Alum, optimize dose response for your study to minimize adverse impacts.

## PREPARATION

Before use, mix Alum by inverting the bottle several times to create a uniform suspension.

**Optional:** Immediately before use and before mixing with antigen, sonicate the Alum for 5 minutes. Transfer a portion of Alum that you are going to mix with antigen into a tube. Place the Alum in a sonication bath for 5 minutes. Other types of sonication devices could also be used.

## PROTOCOL

1. Prepare antigen in phosphate buffer saline.
2. Add Alum Adjuvant dropwise with mixing in a ratio 1:1 (For example: 100  $\mu$ l adjuvant to 100  $\mu$ l of antigen) to 1:5 (For example: 100  $\mu$ l adjuvant to 500  $\mu$ l of antigen).
3. Mix gently for 30 minutes to allow adsorption of antigen on Alum.
4. Immunize animals according to the standard protocol<sup>3</sup>.

**NOTE:** *Appropriate volume of antigen-alum suspension and appropriate amount of antigen to be injected should be selected based on species to be injected. For example, for mice appropriate volume is 100-200  $\mu$ l and concentration of antigen is 50 to 100  $\mu$ g.<sup>2</sup>*

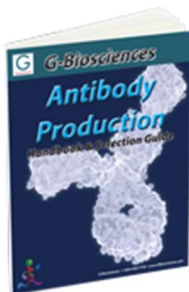
**NOTE:** *Do not inject adjuvant intravenously as it can lead to anaphylaxis.*

## REFERENCES

1. Fares, B. H., Al-Tememy, H. A. H., and Al-Dhalimy, A. M. B. (2022). Arch Razi Inst. 77 (1): 221-228
2. Hem, S. L., and HogenEsch, H. (2007). Expert Rev. Vaccines 6, 685-698.
3. Harlow, E. and Lane, D. (1988). *Antibodies A Laboratory Manual*. Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, pp. 56-100.

## RELATED PRODUCTS

Download our Antibody Production and Protein Purification Handbooks



<http://info2.gbiosciences.com/complete-antibody-production-handbook>

For other related products, visit our website at [www.GBiosciences.com](http://www.GBiosciences.com) or contact us.



**[www.GBiosciences.com](http://www.GBiosciences.com)**