Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/24411
DOI URL: http://dx.doi.org/10.21474/IJAR01/24411

ISSN (O): 2320-5407
ISSN (P): 3107-4928

RESEARCH ARTICLE

STUDY OF AGGLUTINATION REACTION OF AG-AB COATED WITH SODIUM ALGINATE BEADS

Eswari Beeram

1. Assistant Professor, DBCS, SoLAS, Mohan Babu University, A.P, India-517102.

Manuscript Info

Manuscript History
Received: 14 August 2026
Final Accepted: 16 September 2026
Published: October 2026

Abstract

Agglutination reaction is one of the types of Ag-Ab interactions studied using anti-sera to know the presence of antigen in the unknown samples. Till now there are reports for the study using latex beads, but our lab has devised a new protocol which is simple and quite reliable to detect agglutination on the slide using anti-sera of blood group antigens. But the technique works well with any of the Ag and Ab to demonstrate the agglutination. Sodium alginate beads are generally used for immobilization of enzymes but for the first time our lab designed a methodology for study of Ag-Ab interactions using sodium alginate beads.

"© 2026 by the Author(s). Published by IJAR under CC BY 4.0. Unrestricted use allowed with credit to the author."

Introduction:-

Agglutination is considered as one of the antigen–antibody (Ag–Ab) reaction in which particulate antigens or antibody coated particulates which will form visible clumps due to the interaction. It is one of the immunological reactions that help in diagnosis of various diseasescaused by bacteria, virus or parasites. Antigens are the substances that recognize and bind to immunoglobulins with specificity to mount an immune response. Sodium alginate is a naturally available, bio compatiblepolymer procured from brown algae and can form beads due to its gel forming properties in presence of calcium ions.These beads can function as carriers for antigens and antibodies to serve for the purpose of immobilization. Immobilization may improve the stability, handling and biological interaction in the use for experimental studies.When a specific antigen reacts with specific antibody cross linking may lead to visible clumping under suitable conditions.Study on this reaction and sodium alginate beads can help in understanding the antigen and antibody interactions and immobilization purpose. The current study aims to study the agglutination reactionsinvolving antigen- antibody interactions in the presence of sodium alginate and to explore their use in potential applications for immunodiagnostics.

Methodology:-

1. Prepare 3% solution of sodium alginate as semi slurry using distilled water
2. Prepare 1% CaCl2 solution and drop sodium alginate slurry in to the Cacl2 solution in a drop wise manner.
3. Bead formation is observed and the stabilization of beads is done by allowing the beads to stand for 10 min in Cacl2 solution
4. After stabilization the beads are decanted from the CaCl2 solution and spread evenly on the Petri plate.

Corresponding Author:- Eswari Beeram
Address**:-** Assistant Professor, DBCS, SoLAS, Mohan Babu University, A.P, India-517102.

5. The beads are removed with water content by lyophilization using microwave oven and the are coated with anti-A & anti- B sera separately.
6. Blood sample from AB+ ve person is collected and coated beads are incubated with the blood solution mixed well and observed for agglutination.

Observation:-
Agglutination is observed for the given blood sample and the protocol is found to be valid.

Figure : 1 Preparation of sodium alginate beads using anti-A and B antisera and the agglutination reaction with anti A &B antisera with AB+ve blood.