Biomedical science - lab report example

Biomedical Science

A Tetanus Toxoid T lymphocyte Proliferation Assay College: Tetanus Toxoid (TT) µg/ml count (cpm) count (cpm) count (cpm) Average count (cpm) count (cpm) in log

No antigen

2217

1686

1849

1917

3. 28

TT 0. 01

10504

10867

11117

10829

4

TT 0. 1

32265

29135

37944

33115

4. 5

TT 1

94541

102169

96627

97779

5

TT 10

126790

123237

118140

122722

5. 1

TT 100

125785

128434

121327

125182

5. 1

3. 1

Ovalbumin

1678

1267

1128

1358

(100 mg/ml)

Table 1. Count of PBMC’s in logs and the toxoids conc in Ug/ml

Figure 1. Graphical presentation of the data cpm against the Tetanus toxoids (log scale)

a). Which concentration of TT gave maximum T cell proliferation?

10 µg/ml

b). Which APC are present in the PBMC?

Dendritic Cells

B cells

Monocytes

Macrophages

c) Why was ovalbumin used in this experiment?

Since it is a T-cell dependent antigen it was used as a protein model to study antigen specific immune response in the mice. It was also used because it is inert and non-specific hence doesn’t cause harm to the mouse even after the immune response is not induced.

d). Discuss the results obtained.

Basing on the graph above, it is clearly evident that the toxoids induced the immune response. When the concentration of the toxoids was increased so does the PBMC’s. The maximum amount of the toxoids that is able to induce the immune response is 100ug/ml and at this point the maximum immune cells that are generated from this are about 122722cpm. The proliferation of Antigen-specific T-cell normally employed as an assay for the responses of T-cell (Zhang et al, 1998). Humans or mice T cells immunised with a given antigen. For instance, in this case tetanus toxoids, they have a capacity of proliferating after being exposed to the antigen presenting cells as well as tetanus toxoids but this can’t be from the antigens related to it that had not been immunized. The measurement of proliferation can be done by incorporating of 3H-thymidine into the actively dividing cells DNA (Ehl et al, 1997). The proliferation of antigen-specific is a specific CD4 T cell immunity

hallmark (Tough et al, 1996).

Bibliography

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