In vitro Immuno-modulatory Activity of Aqueous *Quercus infectoria* Gall Extract

*Azlina Y¹, Wan Nor Amilah WAW², Nurul Asma A²

¹Jabatan Patologi, Hospital Sultanah Nur Zahirah
²Pusat Pengajian Sains Kesihatan, Universiti Sains Malaysia

Abstract

Immuno-modulatory entities have now become an important part in the treatment of cancer, infectious diseases and immune deficiencies. There are many local plants from which the bioactive compound can be extracted. One of the important herbal plants that attracts the attention of many researchers is *Q. infectoria* (manjakani). The effect of its gall extract on macrophages can enhance our knowledge on its immuno-modulatory activity. In this study, macrophages J774A.1 were treated with aqueous *Q. infectoria* gall extract with a concentration of 62.5, 31.25 and 15.625 ug/ml. The proliferation of the cells was studied using MTT assay after treating the cells for respectively 24, 48 and 72 h. Apart from this, the phagocytic activity was measured using a flow cytometer and the results were analyzed after 72 h of treatment. Multi-analyte ELISArray was used in the detection of cytokines with 62.5 ug/ml treated macrophages. It was observed that the proliferation of J774A.1 was greater in all concentration of treated compared to untreated macrophages. In the same way, treatment with aqueous *Q. infectoria* extract also showed an increased in the phagocytic activity of the macrophages. Although treating the macrophages with 62.5 ug/ml of extract increased the absorbance value in IL-2, IL-5, IL-10, IL-17A, IL-23, TGF-β and TNF-α but they are not statistically significant from untreated macrophages. Hence it could be suggested that an aqueous *Q. infectoria* gall extract could show some effect on the immuno-modulatory activities of macrophages.

**Keywords:** Immuno-modulator, *Quercus infectoria* gall extract, macrophage

*Authors for Correspondence*