

**Bioactivity of aqueous extract of leaf, fruit, stem, bark and root  
of *Berberis koreana* a comparison**

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**Objectives**

Medicinal plants are of great interest as starting material for identification of new biologically active compounds. Different part of the plant contains different chemical compounds according to their particular role in plant survival. The first step for the identification of bioactive compounds in the biomedical field is the screening of extracts from different tissues of the plant for a given activity. In order to carry out a study that guides us to the isolation of the most active compounds from plants, different extracts were achieved and their activities evaluated. In this study antioxidant, anticancer, and immunomodulatory activity of aqueous extract from leaf, fruit, stem, bark and root of *Berberis koreana* were evaluated.

**Materials and Methods**

Fresh plants of Korean barberry (*Berberis koreana*) at the mature stage were picked from a commercial orchard in Hoengseong Mt. Balgyo in July, 2007. The leaf, fruit, stem, bark and root of *Berberis koreana* was used for this study.

All extract were extracted by water at 60°C for 24 hours. The anticancer against A549, AGS, Hep3B MCF-7 and cytotoxicity against HEK293 were measured by SRB assay. The B, T cell proliferation were measured by MTT assay. The scavenging activity of DPPH radical and xanthine oxidase activity were also measured.

**Results**

All extract of *Berberis koreana* were showed good antioxidant, anticancer and immunomodulatory activities. The aqueous extract of the leaf have maximum antioxidant and immunomodulatory activity followed by fruit extract where as the root extract have maximum anticancer activity followed by bark extract. The minimum and maximum cytotoxicity on human normal kidney cells were showed by leaf and bark extract respectively. The peak patterns of the samples were not very similar in all extracts because of some different compound present in different extract. We conclude that the root and leaves of the medicinal plant, *Berberis koreana* may have different bioactive substances that have potential for use as anticancer, antioxidant and immunomodulatory effect. Further studies should be conducted for isolation and characterization of pure compound from leaf, root and bark of *Berberis koreana*.

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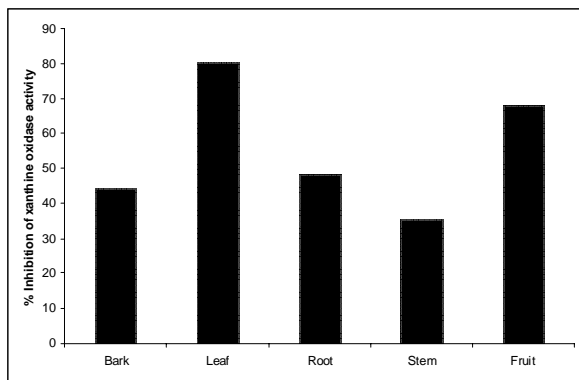


Fig.1. The percentage inhibition of xanthine oxidase activity by adding 0.5 mg/ml concentration of different aqueous extract of *Berberis koreana*.

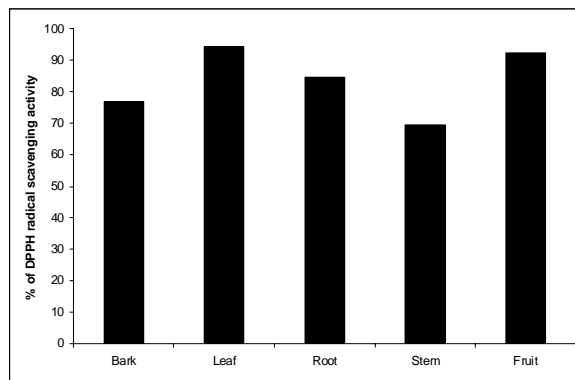


Fig.2. DPPH radical scavenging activities of crude extracts by adding 0.5 mg/ml aqueous extracts of *Berberis koreana*.

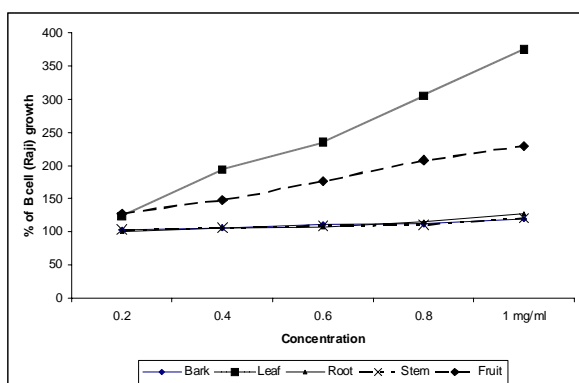


Fig.3. The percentage of B cell growth by adding different concentration of aqueous extracts of *Berberis koreana*.

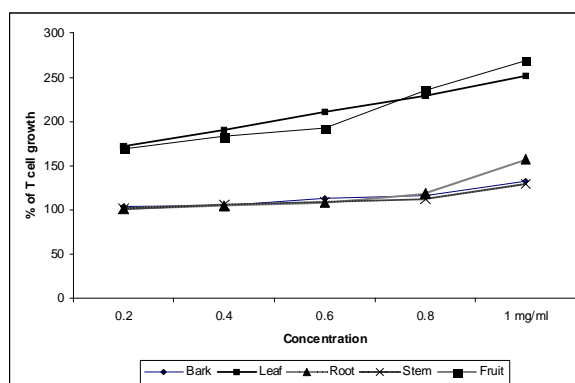


Fig.4. The percentage of T cell growth by adding different concentration of aqueous extracts of *Berberis koreana*.

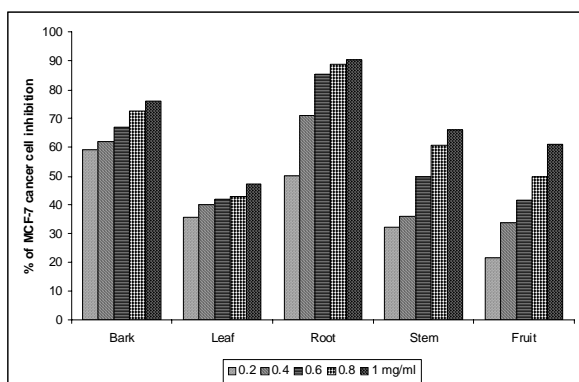


Fig.5. The percentage inhibition of human cancer cell line (MCF-7) by adding several concentration of different aqueous extracts of *Berberis koreana*.

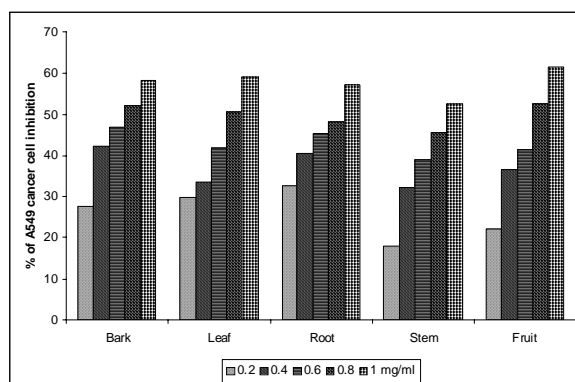


Fig.6. The percentage inhibition of human cancer cell line (A549) by adding several concentration of different aqueous extract of *Berberis koreana*.