

## **Scanning microanalysis and cellular response to metallic ions released from metallic denture base**

In spite of that cobalt chromium partial dentures were for long time as popular, safe and biocompatible dentures, but the recent investigations which used recent analysis methods doubt about their biocompatibility and their effect on the oral tissues. This work was aimed to detect the presence of metal ions released from cobalt chromium partial dentures into the oral gingival tissues and study the effect of this release on the oral gingival tissues. The study was applied in two steps. The first step was clinical to detect the metal ions released using scanning X-ray microanalysis method. Two groups of patients were chosen - each group contained six patients. The first group had worn cobalt chromium partial dentures for at least two years ago. The second group (control group) had no dentures or any metallic components. Gingival biopsies were taken from the palatal gingiva of each patient and prepared for microanalysis. The second step was done *in-vitro* using cell culture method to study the cellular response to metal ions released. Six cobalt chromium specimens were prepared and used for studying of cell viability using trypan blue and neutral red dye absorbance tests. Cobalt chromium denture wearers showed presence of metal ions in their palatal gingival tissues released from their dentures after long use. Scanning X-ray computerized microanalysis is an exact and accurate method for alloy analysis and for detection of the presence of metal ions in oral tissues. Even the metal ions released from cobalt chromium alloy into the oral gingival tissues is minor, but their effect on the tissues may produce biocompatibility problems. *In-vitro* viability cell culture study showed changes in cell morphology and membrane in all cells exposed to cobalt chromium alloy compared to cells not exposed to the alloy. Trypan blue and neutral red dye viability tests showed loss of cell viability which contact cobalt chromium alloy. Tissue reactions (found in the present study) to the cobalt chromium is believed to be related to the metal ions released into the oral tissues.