Abstract

OBJECTS: To investigate the effects of curcumin (CUR) and melatonin (MEL) on new bone formation following rapid maxillary expansion (RME) in rats.

SETTING AND SAMPLE POPULATION: For this study, 24 12-week-old adult male Wistar albino rats from the Animal Laboratory at Adnan Menderes University, Faculty of Medicine, were used.

MATERIALS AND METHODS: The rats were randomly divided into the following 3 groups (n = 8 each): only expansion (OE), expansion plus MEL (MEL) and expansion plus CUR (CUR). CUR and MEL were given to the rats during the study period. After the sacrifice of the animals, biochemical, histological and immunohistochemical examinations were performed.

RESULTS: Serum bone alkaline phosphatase levels in the MEL group were statistically (P = .007) higher than in the OE group. Serum glutathione peroxidase and catalase activities in the CUR and MEL groups were significantly higher than in the OE group (P = .007 and P = .021, respectively). Inflammatory cell infiltration, new bone formation and capillary intensity parameters did not demonstrate statistically significant differences between the groups (P = .865, P = .067 and P = .055, respectively). The immunohistochemical findings revealed that IL-1, IL-6 and TNF-α H scores showed considerable differences between the groups (all P < .001). The highest IL-1, IL-6 and TNF-α H scores were found in the OE groups rather than in the other groups (P < .001).

CONCLUSION: CUR and MEL treatments may be effective in accelerating new bone formation and beneficial in preventing relapse following the RME procedures.