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**Levels of Hsp60 in periodontal tissue of rats: influence of injections of hyaluronic acid**

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**Abstract**

Heat shock protein 60 (Hsp60) is considered as one of the possible autoantigens involved in the pathogenesis of a number of chronic diseases including periodontal diseases. The application of hyaluronic acid or hyaluronan (HA) in the treatment of periodontitis has been evaluated in several clinical trials, however, the effect of hyaluronic acid on heat shock protein 60 level in periodontal soft tissues has not been studied. The aim of this work was to evaluate the effect of HA injections on levels of Hsp60 in periodontal tissue of the rats. Samples of periodontal tissue of mandibular incisors of adult male Wistar rats at 10-12 months of age were investigated. Rats were distributed into the control group and the periodontitis group. Visual manifestations of hyperemia of the gums around the incisors were the criterion for selecting animals into the periodontitis group. There were two subgroups in the control group: intact rats (I); intact rats after HA “hyaDENT BG” 1.0 MDa (BioScience GmbH, Germany) treatment (I+“G-1.0”). There were four subgroups in the periodontitis group: rats with periodontitis (P); rats with periodontitis after HA “hyaDENT BG” 1.0 MDa (BioScience GmbH, Germany) treatment (P+“G-1.0”); rats with periodontitis after HA “SERTOBEC” 2.4 MDa (S.C. Rompharm Company S.R.L., Romania) treatment (P+“S-2.4”); rats with periodontitis after HA “SERTOBEC Tendon” 2.4 МDа (S.C. Rompharm Company S.R.L., Romania) treatment (P+“ST-2.4”). There were three animals in each subgroup. Rats were injected 0.05 ml HA in the area of alveolar processus of central incisors once a week, three times. Levels of Hsp60 in total lysates of periodontal tissue were tested by Western blotting method before and after the treatment with HA (one month after the last injection). There was no significant difference between levels of Hsp60 in total lysates of periodontal tissue of intact rats and rats with periodontitis before treatment (p>0.05). Rats with periodontitis showed decreased inflammation in the periodontal tissue after treatment with HA with different molecular weight. Intact rats and rats with periodontitis which were treated with HA “hyaDENT BG” 1.0 MDa showed reduced levels of Hsp60 in total lysates of periodontal tissue comparatively with levels of Hsp60 before treatment (by 15.4 and 10.7 times respectively, p<0.001). Rats with periodontitis which were treated with HA “SERTOBEC” 2.4 MDa or HA “SERTOBEC Tendon” 2.4 MDa also showed reduced levels of Hsp60 in total lysates of periodontal tissue com­paratively with levels of Hsp60 before treatment (by 21.3 and 16.4 times respectively, p<0.001). Rats with pe­riodontitis showed the decrease in inflammation in periodontal tissue after treatment with HA with different molecular weight. Injections of HA has contributed to reduce levels of Hsp60 in periodontal tissue of intact rats and rats with periodontitis.