The comparison of Nuclease activity in chicken egg albumen with commercial *DNase I* enzyme

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Abstract

In the recent years, making the genetically modified organisms has been one of the most endeavor research fields. Among animal models, transgenic birds are one of the major candidates for production of biopharmaceutical proteins. In recent studies conducted by the present authors, nuclease properties of egg albumen as a possible biological barrier that could attenuate chicken transgenesis efficiency through SMGT approach and transfection of blastoderm cells were identified. Therefore, the aim of this study was to compare the nuclease activity of egg albumen With the *DNase I* enzyme, as a commercial enzyme that digesting DNA. In order to eliminate the possible differences in the amount of egg white nuclease properties between eggs, egg albumen from ten eggs was pooled. Then, one µg of pDB2 plasmid, were incubated with different ratio of chicken egg white in a fixed volume of 100 and then 300 µl, and as well as incubated with 1 unit of *DNase I* enzyme, at 37 ° C for 30 minutes. After that, the phenol-chloroform mixture were used for isolation of nucleic acids from the protein component of egg white, and in order to compare the band patterns, a fixed amount of supernatant was loaded directly onto a 1% agarose gel. According to the qualitative assessment performed in relation to comparison of nuclease activity in chicken egg white and *DNase I* enzyme, the results indicated that, the nuclease activity of 250-300 µl of chicken egg albumen is equivalent to 1 unit of nuclease activity of *DNase I* enzyme.

Keywords: Egg albumen, Nuclease Activity, *DNase I* enzyme, pDB2 Plasmid, Transgenesis.

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