

论著

补充核酸内切酶III对DNA氧化损伤影响的研究

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摘要 目的:核酸内切酶III在DNA损伤的切补修复体系中可能发挥着重要作用,是否有效地促进DNA损伤修复本文进行了探讨。方法:本研究采用“彗星”电泳技术分析DNA断裂损伤,利用人体淋巴细胞和Hela细胞并用100 μ molH₂O₂诱导DNA严重损伤,其损伤分别达到19815和320(专用单位,AU),然后再将两种细胞各分为两组;一组为对照组,另一组为实验组补充25 μ l(1 μ g/ml)的核酸内切酶III。在培养至30min,60min,180min和240min时观察DNA断裂损伤情况。结果:淋巴细胞DNA断裂损伤在对照组中经过4h培养后逐渐得到修复,DNA损伤由初始时的19815下降到64127(AU);补充核酸内切酶III的实验组尽管DNA断裂经过4h后也得到修复,但DNA断裂损伤率仍明显高于对照组(P均<0.05)。Hela细胞对H₂O₂表现出较高的敏感性并有极强的自身修复能力,对照组DNA断裂损伤从初始时的320下降到4h后的19(AU),自身修复率达到9411%,然而补充核酸内切酶III的Hela细胞DNA断裂损伤率在30min、60min、180min、240min时均明显高于对照组(P<0.05)。结论:本结果提示核酸内切酶III在DNA损伤修复中增加了DNA的断裂损伤率。

关键词 [核酸内切酶III](#) [彗星电泳](#) [DNA损伤](#) [DNA修复](#)

THE EFFECT OF ENDONUCLEASE III SUPPLEMENTATION ON THE DAMAGE OF DNA STRAND BREAKS

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Abstract Purpose and Methods : The aim of the study was observing the effect of endonuclease III supplementation on the damage of DNA strand breaks, which were measured by comet assay (SCGE). Results : DNA strand break damage of lymphocytes and HeLa cells induced by 100 μ mol H₂O₂ in controls reached 198.5 and 320 arbitrary units respectively. The rate of DNA strand breaks of lymphocytes was gradually decreased from the beginning to 4 hour culture in control group. At the end of 4 hour culture, there was a much lower rate of DNA repair in Endonuclease III group with 33.4% than control group with 67.6% (P < 0.05). The same result was found in HeLa cells. The levels of DNA strand breaks was quickly decreased from 320 to 19 arbitrary units in control group within 4 hour culture, whereas the DNA strand breaks in supplementing group with Endonuclease III was kept at a high level with 172.0 arbitrary unit s at 4 hour culture (P < 0.05). Conclusion : The study suggested that the supplementation of endonuclease III could increase the levels of DNA strand breaks.

Keywords [endonuclease III](#) [SCGE](#) [lymphocyte](#) [DNA repair](#) [DNA damage](#)

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