DOI:10.16016/j.1000-5404.1992.03.017

Injurious effects of free radicals on 5 organs and hepatic mitochondria during traumatic shock in rats

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Abstract A model of traumatic shock was established in rats by comminutedly fracturing of the right femur and bleeding of 15% of the body weight. In the 1st hour after injury, the content of malondialdehyde (MDA) of the heart and the lungs increased, the activity of superoxide dismutase (SOD) in the lungs decreased, and the MDA content and SOD activity in hepatic mitochondria increased synchronously. In the 3rd hour after injury, the MDA content increased not only in the heart, the lungs and hepatic mitochondria but also in the liver and the kidneys, and the SOD activity increased in the heart, the kidneys and the intestinal tract but decreased in hepatic mitochondria. There were further marked elevation of MDA content and progressive inhibition on SOD activity in the 5 vital organs and hepatic mitochondria in the 5th hour after injury. When shock continued to progress, the plasma MDA content increased gradually, the SOD activity of the hemolytic blood decreased, and the activities of plasma acid phosphatase and β-glucuronidase, the indicators of lysosome destruction, increased markedly. These findings suggest that the oxygen-derived free radicals are responsible for the damages to cells of the vital organs and subcellular organelles during traumatic shock.

Key words rat; shock, traumatic; free radicals; malondialdehyde; superoxide dismutase; mitochondra

科研简报

人工合成丁型肝炎病毒(HDV)抗原片段初报

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丁型肝炎病毒抗原(HDAg)是迄今证实的由该病毒编码的唯一单链蛋白。现已证实 HDAg 有与 HDV 核酸结合的活性，为 HDV 复制所必需。深入进行 HDAg 生物活性的研究有助于阐明 HDV 感染者的病情发展和预后。由于天然 HDAg 材料来源困难，提取纯化过程复杂、产率低、产物稳定性差，很难获得纯度高、稳定性好、足量的 HDAg 。为此，我们参考现有文献资料自行选择、设计并合成了含天然 HDAg 上的部分片段的 29 ，已初步证实它具有天然 HDAg 的部分活性，能专一地为天然抗 HD 抗体所识别。ELISA 试验表明包被合成抗原与已知抗 HD 抗体阳性血清呈阳性反应，并对天然 HDAg 与抗 HD 抗体反应有竞争作用。试验还表明该合成抗原与鼠血清、兔血清、单纯丙肝抗体阳性血清、单纯甲肝抗体阳性血清无免疫交叉反应。用合成抗原建立 ELISA 法，检测 300 例献血员标本，其中仅有 1 例丁肝抗体阳性，经证实该份标本同时 ALT 活性增高。检测的 177 例住院各型肝炎患者血标本中，有 12 例为抗 HD 抗体阳性(6.78%)。

HDV 合成抗原的获得及应用替代了天然丁肝病毒抗原，为 HDAg 生物学活性的深入研究，HDV 感染的流行病学研究及丁型肝炎发病机理的研究创造了基础和条件。 (郑 红稿)

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