

Germline Outline  
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Problem

Athletes are using Erythropoietin (EPO) to increase strength and endurance, which should be considered in major competitions in order to prevent athletes from gaining an advantage on others participating.

Proposed solution

EPO is a type of protein that is found in our kidneys and produces red blood cells, which can also be found in bone marrow. Production of EPO leads to a higher blood oxygen capacity, which is why athletes have found to use this to increase their endurance capability. In 1998, two cyclists in the Tour de France were found with an increase of EPO.

Use EPO instead to treat anemia and cancer as well as other types of rare and severe diseases. People that have a rare genetic disease or anemia can be treated with EPO. A study developed a tissue protein factory based on dermal cores (Biopump). An adenovector is used to identify the EPO in a human using a cytomegalovirus (CMV). The EPO was measured from 13 patients with chronic renal failure and the implantation was done in 10. EPO levels increased from the beginning of the study and increased after 14 days.

Regulatory Issues

There were no side effects that were shown by the patients. The study does suggest that nonimmunogenic delivery systems should be tested as gene vehicles.

Proposed regulation

Conducting more studies with rare genetic diseases, besides anemia, will help gain more knowledge on how EPO can help treatments. Testing athletes for increase levels of EPO is also recommended in order to avoid cheating in competitions.

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