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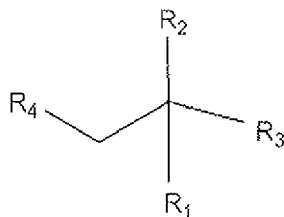
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(54) **Nitrate esters and their use for the treatment of muscle and muscle related diseases**

(57) Alkyl nitrate ester compounds are provided for the delivery of nitric oxide to targeted muscle tissues, and in particular, to normal and dystrophic muscles. In one aspect, nitrate ester compounds are provided having the following formula:

(I)



wherein,
R₁ is ONO₂, CH₂ONO₂, C_nH_{2n+1}OH, C_nH_{2n+1}OH, CH₃, CH₂CH₃, CH₂CH₂CH₃, or H;
R₂ is ONO₂, CH₂ONO₂, C_nH_{2n'+1}OH, C_nH_{2n'+1}OH, CH₃, CH₂CH₃, CH₂CH₂CH₃, or H;
R₃ is ONO₂, CH₂ONO₂, C_nH_{2n''+1}OH, C_nH_{2n''+1}OH, CH₃, CH₂CH₃, CH₂CH₂CH₃, or H; and
R₄ is ONO₂, CH₂ONO₂, C_nH_{2n'+1}OH, C_nH_{2n'+1}OH, CH₃, CH₂CH₃, CH₂CH₂CH₃, or H; wherein n is an integer from 0 to 9, n' is an integer from 0 to 9, and n'' is an integer from 0 to 9, and n+n'+n'' ≤ 9, and wherein at least one of R₁, R₂, and R₃ is an ester nitrate selected from the group consisting of ONO₂, CH₂ONO₂, and combinations thereof.

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