Ascorbic acid as therapeutic adjunct for percutaneous coronary intervention.

**Abstract**

Periprocedural myocardial injury in the setting of elective percutaneous coronary intervention (PCI) is associated with increased risk of death, recurrent infarction, and revascularization at follow-up. Post-percutaneous coronary intervention induced-oxidative stress is one of the potential mechanisms accounting for impaired perfusion. The present invention relates to the antioxidant effect of Vitamin C that is able to improve microcirculatory reperfusion. This approach has a potential application during PCI in order to improve clinical outcome in patients with angina.

**Publications**

There are a number of publications about the effect of Vitamin C during PCI.


**Keywords**

- VITAMIN C
- MYOCARDIAL INFARCTION
- ANTIOXIDANT
- OXIDATIVE STRESS
- PERCUTANEOUS CORONARY INTERVENTION

**Area**

- PHARMACEUTICAL

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**Patent Type**

Patent for invention.

**Ownership**

Sapienza University of Rome 100%.

**Inventors**

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**Industrial & Commercial Reference**

The scope of interest of this invention is the pharmaceutical industry and concerns the use of ascorbic acid or pharmacologically acceptable salts thereof as potential adjuvant therapy of subjects subjected to coronary stent.

**Time to Market**

The effect of Vitamin C infusion has been evaluated in fifty-six patients undergoing elective percutaneous coronary intervention for stable angina. In these patients, impaired microcirculatory reperfusion is improved by vitamin C infusion.

**Availability**

Research, Development, and Experimentation.
Ascorbic acid as therapeutic adjunct for percutaneous coronary intervention.

Technical Description
In prospective study, 1g of vitamin C in infusion was administered to patients with stable angina undergoing percutaneous coronary intervention.

TIMI myocardial perfusion grade <2 was observed in 89% and in 86% of patients randomized to the placebo or vitamin C infusion group, respectively.

After percutaneous coronary intervention, these percentages decreased in the placebo group (32%) and in greater measure in the vitamin C group (4%).

Vitamin C infusion is also effective in reducing plasma levels of 8-OH2dg and 8-iso-PGF2a, two biomarkers of oxidative stress.

These results show that the infusion of Vitamin C is able to improve the microcirculatory reperfusion and the clinical outcome of patients undergoing percutaneous coronary intervention.

Technologies & Advantages
Myocardial infarction is still the main cause of death in the western world.

After percutaneous coronary intervention (PCI), coronary circulation resumes in a non-adequate way.

Myocardial injury takes place as a result of the impairment of downstream coronary microcirculation and this phenomenon increases the risk of re-infarction.

There are several mechanisms that may contribute to compromising coronary flow including local activation of the coagulation system and formation of intracoronary thrombi and endothelial dysfunction.

Post-PCI induced-oxidative stress is another potential mechanism accounting for impaired perfusion. Administration of Vitamin C in patients undergoing PCI helps to improve blood flow and contractility of the heart. Innovative stroke aiuvant therapy is especially interesting for clinical reasons, but also for the simplicity of its application, for the lack of side effects and for the modest cost.

Applications
Considering the clinical implications, the invention is mainly directed to medical staff who could use vitamin C as a therapeutic adjuvant for percutaneous coronary intervention.

Another area of interest is the pharmaceutical sector and in particular companies that are interested in the production of Vitamin C in the treatment of patients undergoing PCI.