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CORRESPONDENCE

Reactive oxygen species in acute lung injury

To the Editor:

In a recently published review article, the authors conclude "antioxidant supplements have to date a poor record in treating life-threatening diseases, and future developments are more likely to come *via* genetic manipulations" [1].

In a prospective randomized trial *N*-acetylcysteine (NAC) was shown to be lifesaving in the treatment (not only the well-known and established prevention) of acute liver failure (ALF) after paracetamol overdose [2]. With a mortality rate of 60–80%, ALF is indeed a life-threatening disease. Only patients who had already progressed to full-blown acute hepatic failure with the involvement of extrahepatic organ systems were included in the trial. NAC treatment was applied until patients either died or came out of the hepatic coma. Survival through NAC treatment was increased from 20% in the control group to 48% (p=0.04).

This trial had been triggered by a previous retrospective analysis indicating that NAC was endowed with therapeutic activity in the above type of ALF [3]. Consequently, there is strong evidence for the value of at least one antioxidant (NAC) for the treatment of an acute life-threatening disease.

The evidence for NAC in acute lung injury is controversial. Two studies that were not cited in the otherwise excellent review showed that NAC exerted therapeutic activity, although the increase in survival was not significant [4, 5]. Two other trials (in more progressed states of the disease) were unable to find substantial NAC activity [6, 7]. However, the study by JEPSEN *et al.* [7] was run at a daily NAC dosage of about 30 g (with a total of 180 g for the 6 days of treatment). There is no justification for such an unreasonably massive dose of NAC, which may well have offset potential benefits through NAC and resulted in misleading conclusions.

It is unlikely that NAC or other antioxidants (and possibly also different types of new agents) will show convincing activity in lung injury, unless selected types of acute lung injury are chosen (and/or earlier stages of disease). This is the lesson from NAC in treatment of acute liver failure. In the absence of such trials' pessimistic comments on the "poor record of antioxidants" appear premature and unjustified. Can we afford to view lightly treatment possibilities before they really undergo adequate testing? Treatment with *N*-acetylcysteine may be efficacious and it surely is both well tolerated and cheap!

R. Ruffmann
INPHARZAM SA, Cadempino, Switzerland. Fax: 41 919664351.

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