Trauma, major surgery, or septic events may cause relevant reduction in plasma AT-III activity. The latter seems related to outcome. On the basis of clinical trauma studies, some authors suggest that AT-III substitution may positively affect organ dysfunction as well as outcome.

The aim of this prospective study was (i) to elucidate alterations in plasma AT-III activity in the earliest period following major trauma and (ii) to assess its relation to IL-6 plasma concentration, a marker of trauma severity.

**Methods:**
Upon approval of the IEC, 30 patients were enrolled with multiple injuries (ISS 9-75). Three groups were performed according to the peak IL-6 concentration within the first 12 hours (I: <600; II: 600-1200; III: >1200 pg/ml) and survivors vs. nonsurvivors. Blood samples were collected on the scene of accident before primary resuscitation, then every other hour for 24 h. Both AT-III activity and IL-6 levels were determined by commercial test kits.

**Results:**
All patients revealed a relation between ISS and peak IL-6 levels at hospital admission (P<0.01, r=0.42) and 6 hours later (P<0.01, r= 0.44) [Fig. 1a/b]. In all groups in AT-III activity was reduced, that did not fall below 70% in minor injuries [Fig. 2a]. In contrast, AT-III activity of either other group started with a reduced activity (<80%) at the site of accident and decreased further to <40% within ½ to 4 h. Therefore, the AT-III activity re-increased spontaneously and steadily [Fig. 2b]. Severest trauma (III) revealed not only the steepest rise in IL-6 concentration [Fig. 2b] but, surprisingly enough, showed also the fastest recovery of AT-III activity [Fig. 3] in contrast to minor injury [Fig. 4]. There was no impact on outcome [Fig. 5].

**Discussion:**
Following major trauma there is a severity-dependent reduction in AT-III activity and a marked IL-6 response starting as early as at the site of accident. Although severest injuries were associated with very low AT-III activities, restoration of activity occurred earlier when compared to minor injuries. Low AT-III activity is said a predictor of DVT, DIC, and ARDS in trauma patients (3, 5), related to infections and dismal outcome, too. Early posttraumatic changes in AT-III activity, however, are unknown. On the other hand, AT-III substitution in patients with severe sepsis was found to attenuate the inflammatory response, in part by down-regulation of the IL-6 activity (1). This observation was confirmed by experimental data (2).

**Conclusion:**
- Our results of trauma victims demonstrate for the first time a clear relationship between AT-III activity and IL-6 and with the severity of the injury, on the other hand, starting as early as at the site of accident.
- The data further indicates that any AT-III substitution might be beneficial in major trauma only if given immediately and
- apparently is necessary only for the first 4 to 6 h.
- These findings may explain a recent prospective trauma study where an AT-III substitution failed to improve outcome (4).
- AT-III treatment may be useful only in patients with severe sepsis.