

# Abstract

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## Low natural killer cell cytotoxic activity in autism: the role of glutathione, IL-2 and IL-15.

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**BACKGROUND:** Although many articles have reported immune abnormalities in autism, NK cell activity has only been examined in one study of 31 patients, of whom 12 were found to have reduced NK activity. The mechanism behind this low NK cell activity was not explored.

**METHODS:** For this reason, we explored the measurement of NK cell activity in 1027 blood samples from autistic children obtained from ten clinics and compared the results to 113 healthy controls. This counting of NK cells and the measurement of their lytic activity enabled us to express the NK cell activity/100 cells.

**RESULTS:** At the cutoff of 15-50 LU we found that NK cell activity was low in 41-81% of the patients from the different clinics. This NK cell activity below 15 LU was found in only 8% of healthy subjects ( $p < 0.001$ ). Low NK cell activity in both groups did not correlate with percentage and absolute number of CD16(+)/CD56(+) cells. When the NK cytotoxic activity was expressed based on activity/100 CD16(+)/CD56(+) cells, several patients who had displayed NK cell activity below 15 LU exhibited normal NK cell activity. Overall, after this correction factor, 45% of the children with autism still exhibited low NK cell activity, correlating with the intracellular level of glutathione. Finally, we cultured lymphocytes of patients with low or high NK cell activity/cell with or without glutathione, IL-2 and IL-15. The induction of NK cell activity by IL-2, IL-15 and glutathione was more pronounced in a subgroup with very low NK cell activity.

**CONCLUSION:** We conclude that that 45% of a subgroup of children with autism suffers from low NK cell activity, and that low intracellular levels of glutathione, IL-2 and IL-15 may be responsible.

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