

**Technology**

Method of antagonizing the effects of alcohol on cell adhesion

**Inventor**

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**Key Features**

- Prophylaxis or treatment of alcohol-related medical conditions
- Inhibitory effect of cell-cell adhesion
- Could prevent the adverse effects of alcohol on learning and memory
- Could prevent the adverse effects of fetal alcohol syndrome

**Stage of Development**

Reduced to practice with successful demonstration in both *in vitro* and animal models

**Keywords**

Therapeutic  
- CNS  
- Alcoholism  
- Fetal alcohol syndrome  
- Cell adhesion  
- L1 immunoglobulin cell adhesion molecule

**Patent Status**

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## Ethanol Antagonist (VA Reference No. 00-029)

*Unique method of antagonizing inhibition effects of alcohol on cell adhesion for treatment of alcohol-related medical conditions*

**Technology**

The Department of Veterans Affairs has developed a method of antagonizing inhibition effects of alcohol on cell adhesion. The method could be used for prophylaxis or treatment for a number of potential applications including fetal alcohol syndrome, memory disorder, malformations of the brain, cognitive learning disorders, addiction, neurobehavioral disorders, neurological disorders, or teratogenesis.

**Description**

Ethanol produces its toxicity in developing and adult nervous systems through a variety of mechanisms. Recent evidence suggests that one important mechanism may be the inhibition by ethanol of cell adhesion mediated by the L1 cell adhesion molecule. The VA has discovered an antagonist to inhibit the effects of alcohol on cell-cell adhesion mediated by L1. It also antagonizes the morphological effects of ethanol on proliferating neural cells, and it prevents ethanol-induced cell-death and dysmorphology in mouse embryos. The VA therefore hypothesizes that ethanol causes fetal alcohol syndrome and adult cognitive deficiencies in part through its action on L1, and that antagonists of this effect would prevent these conditions.

**Competitive Advantage**

Molecules that block the effects of ethanol on L1 could be used as potential therapeutic agents for ethanol-related disorders of the nervous system.

This invention:

- Could prevent the adverse effects of ethanol on learning and memory in adults because the current therapies are limited to disease management and not disease prevention.
- Might also prove useful in preventing and treating cognitive disorders and alcohol dependence in adults.

**Status**

The Department of Veterans Affairs is looking for a partner for further development and commercialization of this technology through a license, and the VA inventors are available to collaborate with interested companies through a Cooperative Research and Development Agreement (CRADA).