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Pharmacotherapy, pharmacogenomics, and the future of alcohol dependence treatment

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The neurobiological basis of alcohol dependence, established pharmacotherapies for alcohol dependence, pharmacotherapies under investigation, and obstacles to treatment are discussed.

Alcohol binds to hydrophobic pockets of proteins, changing their three-dimensional structure and their function. Proteins that are particularly sensitive to alcohol include ion channels, neurotransmitter receptors, and enzymes involved in signal transduction. Established pharmacologic treatments, notably disulfiram and naltrexone, combined with behavioral therapies, may reduce the amount of drinking, the risk of relapse, the number of days of drinking, and craving in some alcohol-dependent individuals. For many patients, however, these treatments are not effective. Recent advances in molecular and behavior genetics are guiding the development of new drugs; these efforts seek to identify pharmacologic pathways relevant to alcohol dependence and to more effectively match treatments to individuals according to their genetic characteristics. Efficacy and safety concerns for acamprosate have been satisfied; the drug was recently released for marketing in the United States. Medications such as sertraline, ondansetron, topiramate, and aripiprazole represent novel lines of research and are currently being tested for use in the treatment of alcoholism. Even with more efficacious medications, however, a transformation must occur in how alcoholism treatment is viewed, not only by the public but also by clinicians.

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