A Study of PartySharp in Prevention of Hangover and in Elimination of Acetaldehyde

Prabhakar, B., M.D, Assistant Professor, and Venkataramanappa, P.V., M.D, Professor and Head, Department of Medicine, Bowring and Lady Curzon Hospital, Bangalore, India.

(Communications to: Kala Suhas Kulkarni, Medical Advisor R&D Center, The Himalaya Drug Company, Makali, Bangalore, India)

ABSTRACT
High alcohol consumption or chronic drinking results in alcohol habituation and alters the psychological and physical well-being of the individual. The various clinical problems that can arise from excess drinking are multiple such as high in blood pressure, headache, digestive disturbances, anxiety and depression, sleep irregularities, sexual difficulties, poor concentration and work performance, liver disease and hangover. The hangover effects manifesting as headache, irritability, nervous tension, depression, tremors are carried over sometimes even after 24 hours after drinking. These symptoms can affect individual performance physically as well as mentally.

The study conducted in patients with the history of chronic alcoholism with oral administration of PartySharp capsules administered at the dose of two capsules before the consumption of alcohol have shown that PartySharp prevents the symptoms of hangover by stimulating the metabolism of alcohol.

INTRODUCTION
Hangover from consuming alcohol affect people of all walks of life. Personality disorders and drinking problems correlate significantly with subjects who experience hangover (Earleywine M. 1993). Alcoholics often have poor sleep during periods of abstinence, during episodes of heavy drinking and during withdrawal from alcohol (Aldrich M.S. 1998). The carryover effects or the hangover hypothesis postulates that alcohol continues to impair performance the morning after drinking, even after low or moderate doses (Finnigan F., Hammersley R. and Cooper T. 1998). Hangover affects the cognitive functions and physical performance in individuals particularly working on machinery and handling aircraft and other heavy vehicles (Moore R.S. 1998).

Many herbal drugs help in the prevention of liver damage from hepatotoxic agents such as ethanol by producing hepatoprotective effect (Chattopadhyay, R.R. et al. 1992, Dwivedi, Y. et al.). Some of the herbs also help in the elimination of ethanol and acetaldehyde from the body (Chauhan, B.L. and Kulkarni, R.D. 1991). Keeping the above facts, a Phase II study with a herbal formulation known as PartySharp, which has been known to rapidly eliminate ethanol in two stages, was undertaken. In the 1st stage, prevention of hangover by helping in the rapid elimination of ethanol was done. In the 2nd stage a study was undertaken to study the pharmacokinetics of this formulation. PartySharp is an herbal formulation comprising of...
Phoenix dactylifera, Cichorium intybus, Andrographis paniculata, Vitis vinifera, Phyllanthus niruri and Emblica officinalis.

MATERIAL AND METHODS
In the 1\textsuperscript{st} phase of the study, volunteers with history of chronic alcoholism were invited to participate in the study. Alcohol was provided to the volunteers to be consumed on the day of study. All the volunteers were dispensed 2 capsules of PartySharp to be consumed half an hour before the consumption of alcohol. The average consumption of alcohol was 250 ml.

The following day all the volunteers were given a questionnaire assessing the hangover symptoms to be filled in.

The results of the first phase were encouraging. During the 2\textsuperscript{nd} stage of the study, the placebo group was added. Eleven volunteers with a history of chronic alcohol consumption of more than 5 years, were selected for the study. The complete physical and general examination was carried out before enrolling them in the trial. Other routine biochemical investigations and Liver enzymes were also carried out. The volunteers were dispensed 2 capsules of PartySharp or a placebo at the beginning of the trial and were provided with 300 ml of alcohol half an hour after consuming the medicine.

Blood ethanol and acetaldehyde levels were measured at 1, 2, 4 and 6 hours after consuming 300 ml of alcohol. Urine was also collected in the first 3 hours for the estimation of ethanol and acetaldehyde. The ethanol and acetaldehyde levels were measured in blood and urine by Gas Chromatography (Model: Michro 9100), which is a reliable and sensitive method for estimating both (Mendenhall, C.L., McGeen, J. and Green, E.S. 1980, Lowls, S. et al. 1983, Steenaart, N.A., Clarke, D.W. and Brien J.F. 1985).

The experimental study was conducted to determine the possible mechanism of action of PartySharp, blood levels of alcohol dehydrogenase and aldehyde dehydrogenase were measured using suitable methods (Agarwal, D.P. and Goedde, H.W. 1990).

RESULTS
The results showed that most of them were relieved of alcohol hangover. The majority of the patients felt fresh in the morning. None of the subjects gave any history of morning sickness, nausea or vomiting irregular sleep, irritability, lethargy or lack of concentration. The blood ethanol levels in PartySharp group were 717.89, 561.075, 606.448, 288.765 mg/dl at 1, 2, 4 and 6 hours respectively as compared to 866.502, 656.102, 684.82 and 436.75 mg/dl at 1, 2, 4 and 6 hours respectively in the placebo group (Fig. 1). The acetaldehyde levels were
19.28, 16.714, 15.438 and 11.4 μg/ml in the placebo group, while with PartySharp the levels were 18.703, 18.275, 15.270 and 10.033 μg/ml at 1, 2, 4 and 6 hours respectively (Fig. 2). The urine excretion of ethanol in the first 3 hours was 573.85 and 572.51 mg/dl with PartySharp and placebo respectively (Fig. 3). The acetaldehyde eliminated in the urine was 10.30 and 6.00 μg/dl with PartySharp and placebo respectively (Fig. 4). The level of alcohol dehydrogenase was 4.95 mu/gm and aldehyde dehydrogenase was 4.7 mu/gm (Figs. 5&6). The results show that PartySharp capsules helped in metabolising the ethanol at a faster rate and also influenced the elimination of acetaldehyde thereby reducing the hangover effects of alcohol, which are produced by accumulation of acetaldehyde.

**DISCUSSION**

Acetaldehyde is the toxic product of the metabolism of ethanol. Acetaldehyde binds to various proteins and thus affects the function of the liver. Through binding to tubulin, acetaldehyde reduces the microtubules' polymerisation; this impairs the secretion of protein and favours its retention and the associated swelling of hepatocytes. Some enzyme activities are also impaired by acetaldehyde adduct formation. Acetaldehyde favours lipid peroxidation, either directly or by...
binding with glutathione. Changes occur in various mitochondrial functions, after chronic consumption of ethanol, which sensitises the mitochondria to the toxic effects of acetaldehyde. Acetaldehyde stimulates collagen production in cultured myofibroblasts, and the acetaldehyde-protein adducts stimulate antibody production against the acetaldehyde epitope. Ethanol-induced liver damage may be aggravated through this immune response. The present study showed that PartySharp metabolises ethanol faster and eliminates acetaldehyde from the body thereby reducing the side effects of ethanol intoxication (Fig. 7).

Hangover is a neglected aspect of alcoholic studies (Truitt, Jr. E.B. 1982). It causes impairment of the intellectual functions and affects the activities of individuals the next day. This study has shown that PartySharp can be a useful drug in preventing hangover symptoms. As seen in the first phase of the study, PartySharp rapidly eliminates ethanol and acetaldehyde the reason for the absence of hangover symptoms in patients of alcoholic drinks, the subsequent day.

REFERENCES


