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Effect of rum and country liquor on pancreas of Swiss albino mice

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Abstract
Alcohol abuse is an important cause of chronic pancreatitis. Pancreatic lesion in alcoholic persons has been reported by some researchers. Alcoholic acute pancreatitis is mostly observed in chronic alcoholics after paroxysmal increase of consumption. The present study discusses the effect of Rum and Country liquor on both endocrine and exocrine part of the pancreas. It was found that rum and country liquor caused acute and chronic pancreatic lesion with the presence of normal lobule in the middle of pathological lobules and variation of intensity of lesion from one lobule to other.

Keywords: rum, liquor and Swiss albino mice

Introduction
Alcoholism is a physical and psychological disease characterized by regular consumption of high quantities of alcohol and troubles with giving up drinking. It is a well-known fact that alcoholism is quite an issue nowadays. According to WHO, excessive use of alcohol causes 5.3% of deaths yearly which makes a total of 3 million deaths. Chronic consumption of a large amount of alcohol disrupts the communication between nervous, endocrine and immune system and causes hormonal disturbances that lead to profound and serious consequences at physiological and behavioural levels.

The pancreas is one of the most important organs of the endocrine system that is involved in the tight control of blood glucose concentration through synthesis and secretion of a peptide hormone called Insulin from beta-cells. Diabetes Mellitus is a syndrome of dysregulated metabolism with high blood glucose levels (hyperglycemia) either due to an abnormal Insulin secretion or signaling in peripheral tissues. Diabetes mellitus is characterized by either a beta-cell deficit such as in insulin- dependent type-1 diabetes or reduced peripheral insulin sensitivity as in type 2 diabetes. Type- 2 diabetes is recognized clinically as a complication which often occurred in alcoholics. Pancreatic damage is also seen in association with hemosiderosis, a common complication of alcohol abuse in which there is excessive accumulation of iron deposites called Hemosiderin in the tissues due to consumption of alcoholic beverages like Bantu beer and Red wine which contain high concentration of iron.

In this article, we would look into the effects of alcoholic beverages like Rum and Country liquor on endocrine and exocrine part of pancreas. For this study, Swiss albino mice were selected and purchased from Calcutta and from Patna (Bihar). The mice were administered with rum and country liquor daily for 5 to 15 days and then examined for effects on their pancreas.

Material method
The mouse was dissected and a piece of pancreas taken out from the body of the mouse as soon as possible to diminish autolysis. Kept the big piece in normal saline, cut their slices 3 to 5 mm in length and dipped them in different fixatives namely Carnoy, Gendre's aqueous, alcoholic Bouin's, Orth, AAF and 10% normal saline separately. After fixing in different fixatives for prescribed period, tissue was dehydrated through increasing grade of alcohol. The dehydrated tissue of pancreas was left in xylene overnight to make it transparent. Now placed the tissue in melted paraffin wax in a pot kept in an incubator (55^0C) and left for one hour, then changed the paraffin by moving tissue from one pot to another pot containing melted paraffin. Tissue was left for one hour and changed again the paraffin bath and left it for one hour more. A section was cut and dipped in cool water. On spatula, took some soft paraffin and melted it by heat. Section was cut by attaching the material block to the object holder of

Microtome. Then, inserted it into the microtome, tightened the holder with screw and adjusted the thickness by revolving the screw to 5 microns. Revolved the handle of the microtome and continued cutting sections. Some plain glass slides cleaned and coated them with thinnest possible layer of Mayer's albumin. By cutting sections in rapid succession, a ribbon was formed. Placed it on water bath at 45^0C or heated the slide on a heater. Repeated warming and cooling of water until the paraffin sections spread out very nicely, the excess water was poured off. When dried nicely, brought the slides to room temperature.

The double staining of the cut tissue was made with haematoxylin and eosin. Removed the paraffin by dipping the slide in xylol. After removal of paraffin, dipped the slide in the following different strengths of alcohol keeping for two minutes in each strength 100%, 90%, 70%, 50% and 30%. Then washed in water. After washing passed on the material in haematoxylin and kept for 5 to 10 minutes. At this stage, nuclear stain was noticed. Then the sections were upgraded by transferring the slide in different strengths of alcohol i.e. 30%, 50%, 70% for 2-3 minutes in each. Transferred the slide to eosin. It stained the cytoplasmic parts of the cell. Further, it was dehydrated by upgrading in 90% and 100% alcohol for 10 minutes in each. Cleared the sections by dipping in xylol and mounted in *Canada balsam* taking care not to include any air bubble under cover slip.

Result

Table 1: The 5 micron thick and double stained T.S. of pancreas of Rum treated albino mice showed the following histological variations at exocrine and endocrine levels

5 Days rum treated Albino mice	15 Days rum treated Albino mice
Great enlargement in acinar cells.	Great expansion in the Islet of Langerhans.
Feeble staining of nucleus.	Prominent and well stained nuclei in acinar cells.
Appearance of damaged area at some places.	Damage of connective tissue.
Irregularity in the shape of acini.	Lacunae appeared in the outer region of Islet of Langerhans.
Rupture of a no. of acini.	Appearance of large damaged area.
Pancreatic lesions.	Poor granulation of acinar cells.
Patchy lobular distribution with presence of normal lobules in the middle region.	Increased condensing vacuoles.

Table 2: T.S. of pancreas of Country liquor treated albino mice showed following histological variation at exocrine and endocrine levels

5 Days country liquor treated Albino mice	15 Days country liquor treated Albino mice
Irregularity in the shape of acini.	Normalization of acinus.
Elliptical area of Islet of Langerhans.	Encapsulation of Islet of Langerhans by means of connective tissue.
The islet cells are peripherically arranged.	Distribution of islet cells is eccentric.
Acini shrinked and compact. Reduction in the size of acinar cells.	Appearance of a few damaged areas.

Discussion

In the present study, alcoholism caused acute and chronic pancreatitis, pancreatic lesions with the presence of normal lobules in the middle of pathological lobules and variation of intensity of lesion from one lobule to other. The patchy distribution of the lesions explains why in the first stages of the disease, clinical symptoms may be evident and pancreatic function may remain normal, the only biological effects being a short- lasting increase of the level of pancreatic enzymes in blood after each attack of pain and an increased concentration of lactoferrin in pancreatic juice.

The lesions of the duct epithelium permit the transduation of serum proteins into pancreatic juice and explain the increased serum concentration of calcium and albumin, which is not a specific character of chronic pancreatitis. Obstruction of the ducts by precipitates, stones and scars is probably responsible for the attacks of acute pancreatitis superimposed on chronic lesions.

Summary and Conclusion

The effect of rum and country liquor was studied at histological level of pancreas. They caused acute and chronic pancreatic lesion with the presence of normal lobules in the middle of pathological lobules with variation of intensity of lesion from one lobule to other.

Thus, it was found that Rum and country liquor caused pancreatic lesions and patchy lobular distribution of lesions. Hence, it confirms that alcoholic effect of rum and country liquor either in acute or chronic use is in no way beneficial to animal health.

References

1. Arky RA, Veverbrants E, Abramson EA. Irreversible hypoglycemia: a complecation of alcohol and insulin. Journal of the American Medical Association 1968;206;575-578.
2. Fitzpatrick, JM. Fitzgerald O, Fitzgeral P. Direct effect of ethanol on the isolated canine pancreas. Br. J. Surg 1975; 62:158-159.
3. Gorbman A, Dickhaff, Walton D, Vigna SR, Clark NB, Ralph CL. "The endocrine pancreas". Comparative endocrinology. A Wiley Inter Science Publication. John Wiley & Sons 1983, 364.
4. Kager L, Lindberg S, Argen G. Alchol consumption and acute pancreatitis in man. Scandivanian Journal of Gastroenterology 1972;7:15.
5. Kuo WN, Hodgins DS, Kuo JF. Adenylate cyclase in Islets of Langerhans, isolation of Islets and regulation of adenylate cyclase activity by various hormones and agents, J Biol. Chem. 1973;248:2705-2711.