

the volume per cm was calculated for each tube. A typical result is shown in Figure 1 from which the secretory rate may be calculated since:

$$V_0 + S = V_t + C + R$$

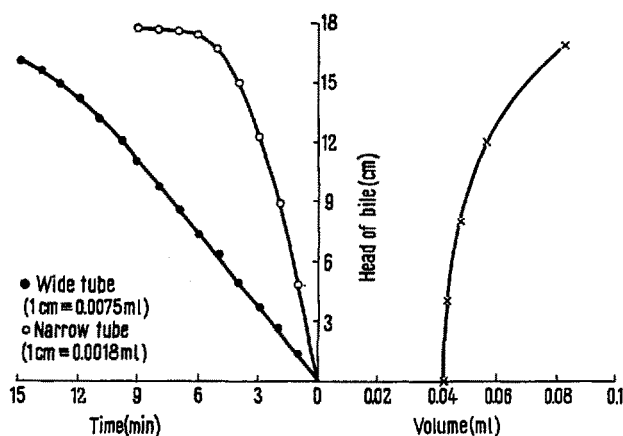


Fig. 1. The left-hand side of the graph shows the rate of bile flow up two vertical tubes of different bore. The right-hand side shows the volume of the biliary tree at different pressures. Single animal.

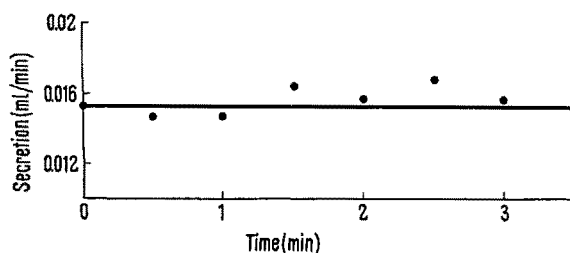


Fig. 2. The mean secretion rates calculated from the equation $S = (V_t - V_0) + C$ at 30 sec intervals following the obstruction of the main outflow. The horizontal line represents the mean control flow rate measured before the experiments.

where V_0 = the undistended volume of the biliary tree, S = the volume of bile secreted in t min, V_t = the distended volume of the biliary tree at time t , C = the volume of bile in the cannula at time t , and R = the volume of bile reabsorbed in t min. Since back pressures of 0–12 cm of bile do not appear to reduce the rate of bile flow from the cannula in rats (apart from a brief temporary pause due to dilatation of the biliary tree), it is thought that $R=0$ over this range, and in these circumstances

$$S = \text{secretory rate} = (V_t - V_0) + C.$$

The mean values obtained for S with the narrow bore tube have been calculated at half minute intervals and are shown in Figure 2. Despite the decline in the rate of ascent of bile up the tube with the passage of time, the secretory rate measured in this way remained constant, and was approximately the same as the biliary outflow measured before the experimental procedure. The values for S found with wide bore tubes were also constant over the same range of back-pressure. The mean value for the ratio of the extra volume of bile in the distended tree, the volume of bile in the cannula ($= V_t - V_0 / C$) when $t = 15$ min was 1.36 ($SE \pm 0.09$) with the narrow bore tubes, and 0.27 ($SE \pm 0.03$) with the wide bore tubes. Finally, Figure 1 shows that the distension per unit rise of pressure was increased as the intrabiliary pressure was raised.

Therefore, these experiments do not support the hypothesis that the biliary secretory effort made against increasing back-pressure is dependent upon substrate accumulation in the case of rats, while the statement that 'the pressure-volume characteristics of the biliary tree play an insignificant part'² would appear to apply here only to the experiments with the relatively wide bore tube.

Résumé. La variation dans la vitesse de la montée de bile dans les vaisseaux biliaires verticaux de calibres différents semble, dans le rat, être expliquée d'une manière satisfaisante par une distension de l'arbre biliaire.

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Variations of Plasma Cholesterol among South Indian Men in Relation to Economical Status and Diet

Results previously published in this journal¹ have shown that plasma cholesterol values, determined in 49 Tamil young men, follow a bimodal distribution. This finding was ascribed to the heterogeneity of the economic status of subjects. The present paper is a preliminary report of a larger survey done in this prospect.

Venous blood was taken before breakfast from 193 unskilled male workers or students living in Madras. All the subjects belonged to the Tamil ethnic group; they were young, 18 to 35 except 5 individuals of about 40, and reasonably healthy as assessed by routine medical examination. The workers constituted a rather heterogeneous

group which can be divided into four professional subgroups. In the order of decreasing economic status, they are the following: laboratory technicians, hospital servants, coolies and workers in sedentary professions, such as street sellers, weavers and unemployed. Total cholesterol expressed in mg per 100 ml of plasma was determined by CRAWFORD's modification of the method of Zak². 'Student's' t test and the F ratio are computed for assessing the significance of results.

As indicated in Table I, the students have a much higher cholesterol level than the workers ($P < 0.001$).

¹ J. G. HENROTTE, G. RANGANATHAN, and G. KRISHNAMURTHI, *Exper.* 16, 350 (1960).

² W. CRAWFORD, *Clin. chim. Acta* 3, 357 (1958).

Within the workers' group itself, the lower the social rank, the smaller the cholesterol concentration ($P < 0.001$). However, the higher value for laboratory technicians might be partly due to their greater age. Their mean age is equal to 30 years, while in the other groups the averages vary from 22 for the students to 28 for the sedentary workers.

Although the students' food is abundant and well balanced, their diet varies following their family traditions. We have classified them roughly into vegetarians and non-vegetarians. It is also important to note that some of them regularly take ghee, a kind of melted clarified butter, with their meals while others never use it, the

Table I. M = mean, σ = standard deviation, and N = number of subjects

Groups	Cholesterol, mg/100 cm ³		
	N	M	σ
Workers:			
Technicians	12	196.92	47.94
Servants	20	164.38	33.40
Coolies	40	153.31	27.73
Sedentaries	30	152.62	35.06
Total	102	160.41	36.18
Students:	91	204.83	39.65

Table II. Means and standard deviations of plasma cholesterol values among students, classified after the type of their diet; N = number of subjects

	No ghee		Ghee	
Vegetarians	N = 11	179.8 \pm 28.8	N = 16	225.3 \pm 31.9
Non-vegetarians	N = 49	208.2 \pm 42.9	N = 14	190.0 \pm 30.4

Primary Visual Potentials in Man During Repetitive Photic Stimulation

The reduction of amplitude and the disappearance of VEP (visual evoked potentials) during prolonged repetitive photic stimulation, observed in animal experiments¹ and referred to as 'habituation', was held probably to be caused by central inhibitory mechanisms¹. VEP have been recorded from the scalp in man, by means of integrative methods or superposition of sweeps, and the phenomenon of visual 'habituation' was held to be present also in the human². However, successive observations³ suggested that, in animals at least, visual 'habituation' was caused by a very marked pupillary constriction. In fact, if pupillary constriction is prevented by atropine and darkened contact lenses with artificial fissured pupils, neither reduction nor disappearance of VEP are observed⁴.

The aim of this investigation is to study the modifications and the variability of primary VEP in man during

food being cooked in oil, mostly gingelly oil (from *Sesamum indicum*) and groundnut oil (from *Arachis hypogaea*). The presence of ghee in the diet seems to affect considerably the cholesterol level among vegetarian people but not among the others (Table II). Vegetarians who do not eat ghee have a much lower cholesterol level than vegetarians who do ($P < 0.001$) and a slightly lower value than non-vegetarians ($P < 0.05$). These data do not permit us to conclude that ghee, when taken with a mainly carbohydrate diet, is directly involved in these variations. In some families, an accidental association between certain food habits and some genetic factors which regulate cholesterol metabolism should not be excluded although, in the present survey, each subgroup is composed of individuals taken at random and originating from numerous different endogamic groups of the former Hindu system of caste.

Contrary to our expectation in a previous study¹, a familial diabetic background does not seem to be associated with hypercholesterolaemia: 23 healthy students who reveal one or several diabetics in their families have an average of 207.9 ± 25.2 mg of plasma cholesterol, while 66 students with no familial diabetics have almost an identical value equal to 202.7 ± 43.6 mg of cholesterol per 100 ml of plasma. However, the variances of the two groups are vastly different ($P < 0.01$). Further analysis will be published later.

Résumé. Le cholestérol plasmatique a été dosé chez 193 jeunes Indiens de Madras. Plus leur niveau économique est bas, plus leur cholestérolémie est faible. Chez les sujets végétariens de niveau économique élevé, la présence de ghee, une sorte de beurre clarifié, dans la nourriture est associée à une cholestérolémie élevée. Les variations quantitatives et qualitatives de la nourriture semblent modifier profondément la cholestérolémie des Indiens.

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repetitive photic stimulation, and its relationship to the pupillary diameter. The recordings have been performed

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