SMOKING PATTERNS IN THE CENTRAL SECURITY SOLDIERS IN CAIRO

Thesis

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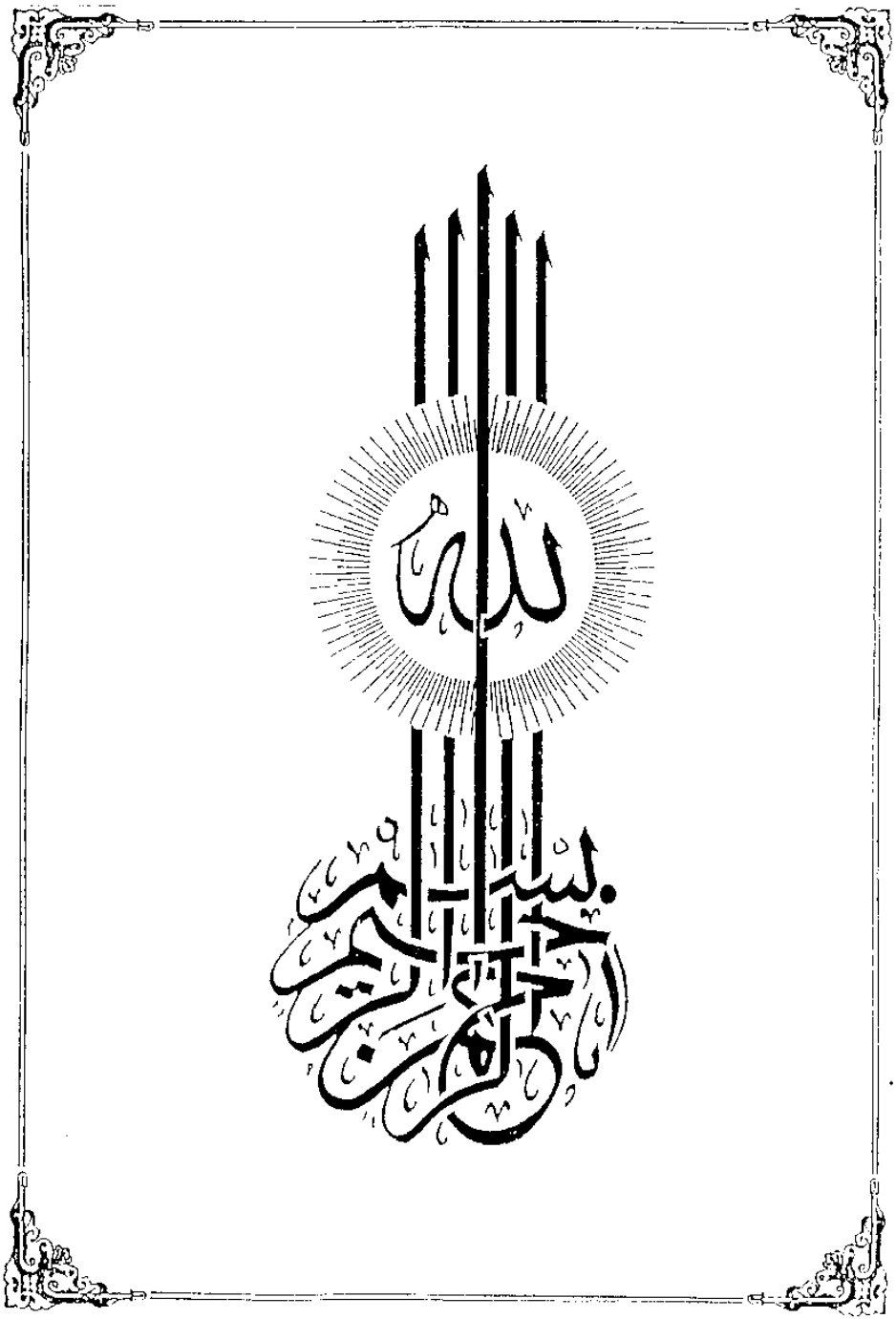

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INTRODUCTION AND AIM OF WORK

INTRODUCTION AND AIM OF THE WORK :

The smoking habit and patterns in Egyptian population is not fully studied apart from Cigarettes, Goza,Boory , Shisha and Nargila are practiced . It is thought that a study of different hemogeneous groups of the population as regard their smoking habits and their relation to chronic obstrutive lung disease will be of value.

Thus the aim of the study is to analyse the data in a group of soldiers of central security department in Cairo. This group, however, are of the same age and living under the same social condition and they come from different provinces of Egypt .

REVIEW OF LITERATURE

Composition of cigarette smoke :

Cigarette smoke is a mixture of gases, vapours and particulate matter. The smoke can be separated into a particuate phase and a gas phase . The gas phase is further subdivided into two parts, one which condense at liquid air termperature and part which do not. The brown yellow condensate of the smoke is known as tobacco tar, which can be collected in traps cooled to the temperature of dry ice (-70 °C) . This tar contains all the particulate phase of the smoke as well as the condensable part of the gas phase. The amount of tar from the smoke of one cigarette is between 3-4 mg. This wide range depends upon ,the burning condensing conditions, the length of the cigarette , the use of a filter, porosoity of the papers, the content of tobacco, weight and kind of tobacco.

It was found that more than 500 different compouds have been identified either in the particulate phase or in the gas phase . These compounds are classified into groups for the purpose of study, chemical and biological analysis . These groups include the alkaloid nicotine and the related compounds, the isoprenoids polycyclic aliphatic hydrocarbons,terpens, isoprenoids hydrocarbons, alcohols, and esters, aldehydes, ketones, acids, phenols,polyphenols, alkaloid nitrogen bases,heterocyclic amino acids, inorganic chemicals such as arsenic, potassium and some metals,

(Johnston & Plimmer, 1959)

Some of the polycyclic compounds isolated from the cigarette smoke have been established to be carcinogenic. But the overall carcinogenic potency of tobacco tar is mush higher than the effect of each substance isolated from it . This difference may be attributed to the presence of co-carcinogens in tobacco smoke, (Hobbes and Philippe, 1956) .

The components of the gas phase of cigarette smoke have been shown to produce various undesirable effects on test animals or organs. One of these effects is the suppression of the ciliary transport activity in the trachea and bronchi. The gas phase accounts for 60% of the total cigarette smoke. It is made up of the following components : Nitrogen 73 mol %,oxygen 10%,Carbon dioxide 9.6% ,carbon monoxide 4.2% ,hydrogen 1% ,Argon 0.6% ,methane 0.5% and 1.1% constitute ethane,propans, acetylene, ethylene,formaldehyde, acetaldehyde,acrolein, methanol,acetone, ammonia, nitrogen-dioxid,hydrogensulphide, hydrogen cyanide and methyl chloride, (Hobbes and Philippe, 1956)

It should be noted that water constitute 27% of the particulate phase , (Johnston and Plimmer,1959).

Armitage et al., (1975), studied some of the constituents of the tobacco smoke. These were carbon monoxide ,nicotine, total particulate matters and other specific substances . Carbon monoxide is one of the most

important constituents of the gas phase of the cigarette smoke. It is produced on the average of 5 volumes percent by weight in the main stream smoke and 10-15 volumes percent by weight in the side stream smoke. The smoke generated during puffing when the air is being drawn through the cigarette is called the main stream smoke, and that generated when the cigarette is burning at rest is called the side stream smoke. Incomplete combustion is the main source of carbon monoxide in the lung during smoking is about 400 parts per million, (Bockhoven & Niessen,1961; Vogel and Glesser, 1972). Nicotine is carried in the particulate phase of the cigarette smoke and is produced in pharmacologically important quantities(500 micrograms per cubic meter),(Huch et al, 1980).

The amount of nicotine which a cigarette delivers varies considerably depending both on brand used and the way in which it is smoked . It is greater from plain cigarette than from filter tipped ones. It varies between approximately 1-2 mg. The dose contained in a single puff can be as mush as 0.2 mg. From a filter tipped cigarette. The amount actually absorbed in the lungs depends on how the smoker deals with the puff. If he takes it into his mouth and follows this with an inspiration of sufficient volume to carry the smoke down into the respiratory zone of his lungs, this is termed as inhaling. In contrast a smoker who takes a puff into his mouth and simply blows it out again is not inhaling. Of course he will almost certainly breath some into his lungs, both from the residual gas in his upper airways and from the

surrounding smoky atmosphere. It is believed that nicotine in alkaline smoke such as that delivered by pipes and cigars can be absorbed from the mouth and pharynx without inhaling.With the acidic smoke cigarette, however, nicotine is absorbed best from the respiratory surface of the lungs, thus inhalers may absorb up to 95% of the nicotine in a puff;while non-inhalers absorb as little as 10%.Absorption from the lungs is rapid. The arterial blood level rising similarly during smoking . It is also quickly metabolised so that the arterial blood level soon falls again on stopping, (Armitage et al., 1975) .

The total particulate matter concentration (Particles per cubic meter) have been shown to be very high in cigarette smoke. The particulate in tobacco smoke varies in size ranging from 0.1u to 1 u (micron) which form a highly respirable range since all these particles will reach deep pulmonary spaces,(Feyerabend et al., 1982) .

Acrolin and other irritating substances emanate from cigarette smoke. Hundreds of substances have been separated most are toxic in more concentration others are known as carcinogens, co-carcingens and respiratory membrane irritants, (Wanner , 1977) .

Carcinogens are the most powerfull cancer initiators that can be isolated from tobacco smoke condensate including the polycyclic aromatic hydrocarbons and N-netrosocompmounds, (Wynder and Hoffman, 1967) .

Carcinogens are of three kinds :-

a) Complete carcinogens capable of causing cancer in appropriate dosage.

b) Tumour initiators which can start the process of malignant change.

c) Tumour promoters which can complete the process of carcinogenesis once it has been intiated, but can not initiate it by themselves, (Horsfield, 1980).

Cancer promoters found in tobacco smoke include phenols, free fatty acids and fatty acid esters. Substances absobed from tobacco may be metabolised in the body giving rise to highly reactive carcinogenic intermediate products. The demonstration of carcinogenic action of tobacco smoke is seen most convincingly in animal experiments where tar condensate is repeatedly applied to the skin, (Wynder and Hoffman, 1967) .

The respiratory membrane irritants are those substances which stimulate coughing, wheezing and secration of mucous and which inhibit the action of cilia (ciliostatic).At least ten compounds are known to be ciliostatic the most important of which is acrolein.

Both of the gaseous phase and condensate of tobacco smoke are ciliostatic and brancho-constrictors.Filtering out one phase or the other reduces but not abolishes the effects (Wynder and Hoffman, 1967).

Injection of tobacco smoke condensate subcutaneously, into the lungs, or painting it on to the tr-

1970 , and Harris et al., 1974).

The temperature in the burning zone plays an important factor in the determination of the composition of the cigarette smoke. It reaches 884 °C during air withdrawal through the cigarette and it reaches 835 °C without air withdrawal through the cigarette, (Advisory Committee to the Surgeon General of the Public Health Service, 1964).

Mollased tobacco smoke (meassel):-

This subject had been studied and reviewed by different authors [Salem et al., (1973) , Salem 1979, Galal et al.,(1973), Salem and Latif (1974) ,El Aaser et al., (1974) and El Dahaby et al.,, (1980)]

In the middle east our local smoking patterns are not confined to cigarettes. " Gosa " and " Shisha " are also widely practiced . They are quite different from cigarettes, Cigars and Pipes .

" Gosa" and " Shisha " smoking utilize procedure of (hubble -bubble) in which the smoking sublimates are passed through a pot containing water. The pot is connected on one side to the mouth piece via a tube made of either vaculated bambo (in Gosa) or rubber (in Shisha) , and on the other side to the receptacle containing the tobacco to be consumed .

The tobacco used is called " tomback " in Shisha and " Meassel " in Goza. Tomback is ordinary tobacco

and Meassel is a mixture of ordinary tobacco and molasses (black honey) in a ratio of 1: 2.4 which gives it a sweat flavour and a moist consistency.

Meassel is put in a clay container called " Hagar " where it is burnt with a piece of coal, the tobacco content of one Hagar is called " Korsi " and is almost equivalent in weight to one cigarette.

The water filter in cases of " Goza " and " Shsha " is more efficient than the cellulose acetate filter in cigarette, in the retention of the content of gaseous phase and the particulate phase of the smoke . In the sublimate reaching the consumer lung the condensate was maximum in the standard cigarette (2.81 %) , it was definitely less in " Gosa " (2.63 %) .

The nicotine content in the smoke of the mollased tobacco (meassel) used in " Gosa " compared to the cigarett smoking was (0.068 % and 0.106 % respectively) . This is also attributed to the water filter effect as shown by the more efficient retaining effect of the water filter. The retained figure were 0.098 % in Gosa water filter compared to 0.035 % in cigarette cillulose acetate filter.

The suction pressure and duration of the puff and the interval between puffs were studied and showed a significant difference between cigarette smoking and " Gosa " smoking .

On applying the water filter to the standard cigarette