CHAPTER II

MATERIALS AND METHODS

I. Materials

Experiments were done in 25 symptomatic asthmatic out-patients who referred to the Allergy and Immunology Section, Department of Medicine, Phramongkutklao Hospital with clinical diagnosis of true bronchial asthma.

There were 13 men and 12 women with an age range from 16 years to 45 years. The mean age was 30½ years. They had several years' history of bronchial asthma, ranging from ½ year to 30 years.

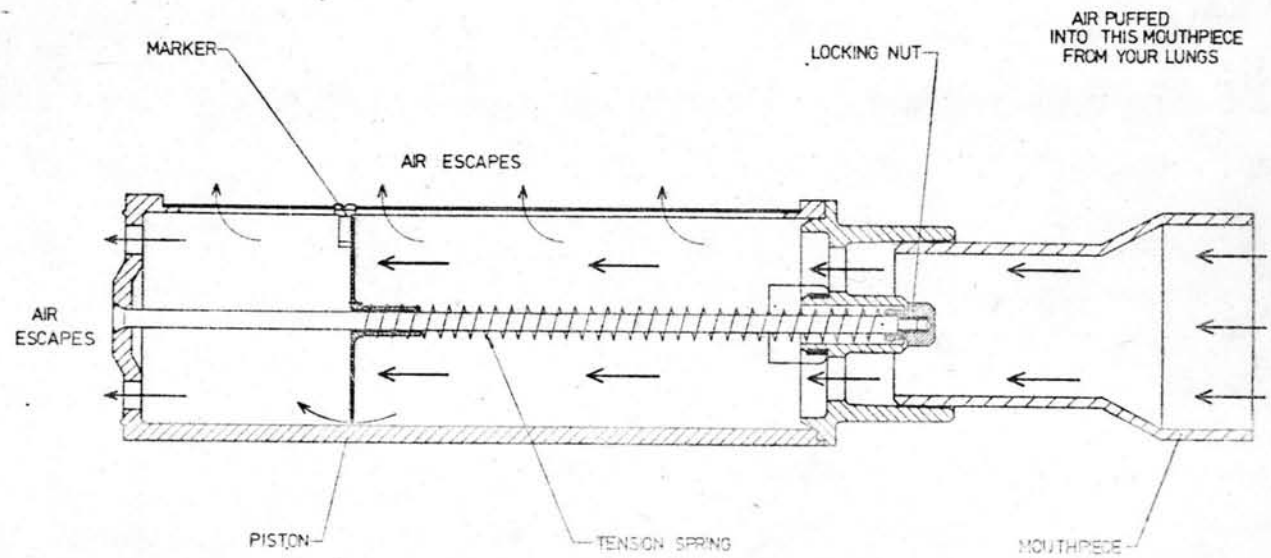
Upon qualification, the subjects were given a thorough physical examination. Pregnant women were not included and no patients had major systemic diseases, e.g., hypertension, cardiac, renal or metabolic disease. All had normal BUN, SGOT, SGPT, bilirubin, complete blood count and urinalysis. EKG was recorded by using 12-lead electrocardiogram.

All short-acting bronchodilators and sympathomimetic drugs were excluded from the patients' regimen for at least eight hours before and during the pulmonary function testing period, while long-acting bronchodilators and steroids were withheld from patients for at least 12 hours before and during the experiments.

The patients had been taught in advance to master a proper expiratory technics and the use of the mini-Wright peak flow meter (Figure 2).

In fig. 2, the diagram shows the principle of operation of the mini-Wright peak flow meter. The subject is asked to take a deep breath, as for a vital capacity, to place the mouthpiece in his mouth, and then to blow into the instrument as hard as he can. It is not necessary to try to empty the lungs, and it is undesirable to do so, because it is unpleasant and tiring, but a certain amount of "follow through" is required. After a couple of practice blows, three attempts in succession are recorded and the best of them is taken.

Figure 2. Diagram of Mini-Wright peak Flow Meter.



II. Methods

2.1 Medicaments.

2.1.1. Berotec® Metered Aerosol (Boehringer Ingelheim).

1 ml. suspension contains 4 mg. 1-(3.5 dihydroxy-phenyl)-2-[[1-(4-hydroxy-benzyl)-ethyl] -amino]-ethanol hydrobromide

or 1 puff contains 200 micrograms fenoterol hydrobromide

2.1.2. Placebo using fluorocarbon propellants

2.2 Instruments.

2.2.1 Mini-Wright peak flowmeter

manufactured by Clement Clarke International Ltd. (15 Wigmore Street, London W1H9LA, England.)

catalog No. 2-01-22910

2.2.2 Electrocardiograph 1500 B Hewlett Packard

2.2.3 Sphygmomanometer 300 "Erkameter".

2.3 Procedures.

The experiments were commenced between 8.00 and 9.00 a.m. to minimize the difference in the spontaneous improvement of the airway resistance. Each patient attended the laboratory on two separate occasions within two days and served as his own control.

At first, the pulse rate and blood pressure were measured in a sitting position, then pulmonary function test was carried out by using mini-Wright peak flowmeter. The best of three expirations was taken as the PEF value.

After that, the patients were allowed to inhaled one puff of 200 micrograms dose of aerosolized fenoterol.

The measurements of lung function were repeated at 1/60, 1/4 1/2, 1, 2, 3, 4, 5, 6, 7 and 8 hours after inhalation of the drug or until the bronchoconstriction was severe enough to curtail the experiments.

The recordings of the pulse rate were repeated in a sitting position at 1/6, 1/3, 1/2, 2/3, 5/6 and 1 hour, and the same intervals were also applied for pulmonary function tests.

The blood pressure were taken at 1/4, 1/2, 1 hour after the inhalation and then at the same intervals as pulmonary function tests.

The EKG was recorded about one hour after the inhalation compared with the control EKG on the previous day.

Inquiries were also made as to the occurrence of palpitation, body weakness, muscular tremors or other symptoms induced by the inhalation of the drug.

The experiments were repeated two days later using one puff of placebo of inert propellant to the same patients so they would serve as their own control.

It was impracticable to carry out a double-blind trial, but the patients did not know what drugs they received. When received placebo, they were told that this spray contained a new bronchodilator drug.

The results were analyzed for statistical significance using Student's t-test on the differences of the mean percentage.