

# Drug Combinations with Steroid Dispensing in Drugstores: A Study in the Center Area of Bangkok, Thailand

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**Abstract**—The purposes of this research were 1) to survey the number of drugstores that unlawful dispense of asthma prescription drugs, in form of drug combinations in the Phaya Thai district of Bangkok, 2) to find the steroids contained in that drug combinations, 3) to find a means for informing general public about the dangers of drugs and for a campaign to stop dispensing them.

Researcher collected drug combinations from 69 drugstores in Phaya Thai district from Feb 15, 2012 to Mar 15, 2012. The survey found 30.43%, 21, drug stores, sold asthma drug combinations to customers without a prescription. These collected samples were tested for steroid contamination by using Immunochromatography kits. Eleven samples, 52.38%, were found contaminated with steroids. In short, there should be control and inspection of drugstores in the distribution of steroid medications. To improve the knowledge of self health maintenance and drug usage among public, Thai Government and Department of Public Health should educate people about the side effects of using drug combinations and steroids.

**Keywords**—Dispensing, Drug Combinations, Steroids

## I. INTRODUCTION

THE problem of using excessive drug combinations still persists in both Bangkok and other provinces. In provincial areas, multiple drugs can be purchased from any drugstore, grocery or even coffee shop. Most of multiple drugs found from sampling were intended to cure flu, to relieve body aches and pain or to lower weight. Each of them was made up of painkillers, with a linking to mental side effects, anti-inflammatory drugs, vitamins and acid reducing medicines. And most of these drugs included some form of steroid drug because pharmacists believe that steroids are effective to treat a wide range of medical conditions [1], [2]. Steroid is a controlled substance according to Notification of Public Health, Subject: Special Controlled Drug. This means steroid distribution is restricted under Drug Act. B.E. 2510, section 4 which states that steroids can only be prescribed by licensed medical practitioner, veterinarian, or a drugstore that has a licensed pharmacist on duty at all times. Thailand's legal principle pertaining to the dispensing of drug combinations under Drug Act. B.E. 2510 section 75 bi amended by Drug Act. B.E. 2530 prohibits any person from dispensing a mixture of medications intending to cure, to treat or to prevent

one particular condition. The prohibition does not apply to a licensed pharmacist, medical practitioner, or licensed dentist who prescribes only to their patients or veterinarian who dispenses only to their patients [3].

The survey of drugstores' distribution of drug combinations for body aches and pain dispensed in Ratchathewi district found 6 of 95 samples contained steroids. Ratchathewi district is located in the heart of Bangkok where there should be no cases of illegal distribution of steroids [9]. A similar survey was conducted in Dusit district and found 12 out of 38 drugstores illegally dispensed ache and pain drug combinations containing steroids. These results are unexpected because both Ratchathewi and Dusit districts are located in the center of Bangkok where there should be no cases of illegal steroid distribution because there are many pharmaceutical outlets in this proper business neighborhood [10].

The effects of glucocorticoids in humans can cause diabetes mellitus, immune reaction suppression, perforation of the ulcer, reduce bone production, and may develop cataract or glaucoma [2], [4], [5]. There are several methods to determine the quantity of steroid (Dexamethasone and Prednisolone) such as; High Performance Liquid Chromatography or Thin Layer Chromatography [11] in the form of Dexamethasone or Prednisolone tablet following pharmacopoeia [8]; or analyzing using Fourier transform infrared spectrophotometer and UV-visible spectrophotometer [7] and this research was qualitative determined dexamethasone; and prednisolone by immunochromatographic test kit from Bureau of Drug and Narcotic, Department of Medical Science, Ministry of Public Health, Thailand which was rapid and simply to perform with no prerequisite regarding laboratory equipments or laboratory skills [6].

The objectives of this research were to survey the dispensing of steroids in asthma drug combinations intended for asthma relief from drugstores in the Phaya Thai district, and evaluate the situation of drug combinations with steroid drug dispensing.

## II. MATERIALS AND METHODS

### A. Sample Collection

The drug combinations were collected by 35 volunteers. The drug combinations were collected from 69 drugstores in the Phaya Thai district, Bangkok on February to March 2012.

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The number, name, and location of 69 drugstores in the Phaya Thai district were provided from Food and Drug Administration, Ministry of Public Health. All volunteers were trained to explain asthma symptoms, price, number of drugs, patient and common data from the drug stores including pharmacist duty.

The drug combinations were brought and collected by students who study in Department of Aesthetic Health Science and Department of Applied Thai Traditional Medicine, Faculty of Science and Technology, Suan Suandha Rajabhat University. Price of each is 5-10 Baht and bought 5-10 sets at a time.



Fig. 1 Drug combinations collected from drugstores in the Phaya Thai district, Bangkok, Thailand

### B. Sample Preparation and Determination

Each tablet from drug combinations was gridded and filled about 250-280mg until it reached the blue line of the test tube. Then, reagent was dropped into the tube about 1.5ml until it reached the red line of the test tube. The suspending were mixed at list 3 minutes by vortex mixer homogeneously and standing for precipitated. The supernatant was dropped (4 drops) into the test well of Immunochromatographic test kit (DMSc Steroid Test Kit, Thailand) and read the result rapidly and not longer than 10 minutes. The positive result was presented as one band at "C" region and negative result was presented as two bands at "T" and "C" region. Prednisolone and dexamethasone were used as positive control (Fig. 2).



Fig. 2 (a) Negative result (b) Positive result

## III. RESULTS AND DISCUSSION

The sample was collected between February and March 2012 by role playing research staff who acted as a customer that wanted to buy five asthma drug combinations, without prescription, for a friend at the dormitory, who had asthma symptoms; wheezing, coughing up sputum and chest pressure. Their friend had said that they previously used asthma drug combinations, from a nearby drugstore or some drugstore in

another district and that it was fast and effective for asthma relief. Some of drugstore did not dispensed drug combinations and told the research staff of side effects of using a toxic with drug combinations because of steroid contamination. Whereas, other drugstores dispensed drug combinations but only one tablet or pack. However, the research staff went back to the drugstore for drug combinations again.

The findings revealed that 26 drugstores (37.68%) denied dispensing drug combinations. Twenty-one drug stores (30.43%) dispensed drug combinations to our volunteers (Table I) and 11 samples (52.38%) contained steroids. The sample of positive results presented as only one band (Fig. 3). These results corresponded with a previous study [9], [10], which showed that steroids were contained in drug combinations which were dispensed for relief of asthma symptom. This may imply that steroids were still used for other symptom, for instance, asthma rather than pain relief.

TABLE I  
DRUG COMBINATIONS DISPENSED FROM DRUGSTORES

Dispensing of drug combinations	Number of drugstores
Denied dispensing drug combinations	26
Dispensed drug combinations	21
Not denied dispensing drug sets but dispended 1 tablet or pack	12
Out of Service	6
Drug company	4
<b>Total</b>	<b>69</b>

From 69 Drugstores in Phaya Thai District



Fig. 3 Positive results

The number of tablets dispensed from each drugstore in Phaya Thai district was varied (Table II). Three tablets were dispensed by 8 drugstores, two tablets were dispensed by 6 drugstores, four tablets were dispensed by 5 drugstores and five tablets were dispensed by 2 drugstores.

TABLE II  
NUMBER OF TABLETS DISPENSED FROM DRUGSTORES

Number of tablets	Number of drugstores
2	6
3	8
4	5
5	2
<b>Total</b>	<b>21</b>

From 21 Drugstores that Dispensed Drug Combinations

## IV. CONCLUSION

The study found 21 drugstores in Bang Phlat district dispensed drug combinations to customers without asking for prescription from the doctor. However, 26 drugstores denied dispensing drug combinations. Some pharmacists even further

informed the staff about steroid content and its side effect in drug combinations. This indicated that most of drugstores were aware of an inappropriateness of drug combinations dispensing and concerned about the safety of public in drug consumption. Some pharmacists informed the staff about the danger of drug combinations which should not be used to relief asthma. They recommended using a tablet or nasal spray instead. Some pharmacists told the research staff to come back with his or her friend and they will give the medicine.

Even though the drugstores in this study were located in center of Bangkok, there still exist a number of drugstores in Phaya Thai that dispense drug combinations inappropriately. An important point is that steroids, a controlled substance, are dispensed without prescription from the doctor. This is an inappropriate from two perspectives: first from inappropriate distribution, second from inappropriate use.

For this reason, the Government and Department of Public Health should enforce steroid regulation seriously, especially, to prevent the case of drug combinations dispensing from a drugstore operating without a pharmacist on duty and without a prescription. To improve the safety of drug usage among the public and also to increase the public awareness of risk and harm from steroids in drug combinations, the Government and Department of Public Health should educate about the side effects of steroids, also at university in the undergraduate level, a health related class for graduation in order to strengthen their knowledge in this field as they are the future of our country. And importantly there should be responsible dispensing behavior. The sellers or pharmacists should be trained or remained of their social responsibility.

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