

COMPARATIVE STUDY OF MARKETED KETOPROFEN TABLET

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ABSTRACT

Poor quality medicines are public health problems that affect both developing and developed countries. According to the World Health Organization, in low and middle-income countries 10% of the medical products are either substandard or falsified. Since, Ethiopia is one of the low-income countries, falsified or substandard medicines could be available in the market. These could be due to lack of adequate resources, weak regulatory enforcement, weak port control, lack of informal market control, poor cooperation between executive bodies and resource constraint. Poor quality drug products could cause treatment failure, increased mortality and morbidity, drug resistance and economic loss. Therefore, the manufacturing, distribution, storage and use of drugs need to be regulated authorized regulatory institutions. The quality of a pharmaceutical product is essential to ensure the safety of the patients. Different parameters of quality control of pharmaceutical products can guarantee the quality and bioavailability and optimal therapeutic activity. Therefore, the present study was undertaken with the aim of assuring the quality of Ketoprofen tablets available in the Indian drug market.

KEYWORDS: Medicine, World health organization, Pharmaceutical product, Ketoprofen.

INTRODUCTION

Ketoprofen is a non-steroidal anti-inflammatory drug (NSAID) belonging to the family of propionics derived from arylcarboxylic acid with analgesic and antipyretic effects. It works by inhibiting cyclooxygenase 1 and 2 (COX 1 and COX 2) enzymes reversibly, which decreases the production of pro-inflammatory prostaglandin precursors. It is widely used in the management of inflammatory and musculoskeletal conditions, pain, and fever in children and adults. Ketoprofen was patented in 1967 and approved for medical use in 1980. Ketoprofen is generally prescribed for arthritis-related inflammatory pains or severe toothaches that result in the inflammation of the gums. Ketoprofen topical patches are being used for treatment of musculoskeletal pain. Ketoprofen can also be used for treatment of some pain, especially nerve pain such as sciatica, post herpetic neuralgia and referred pain for radiculopathy, in the form of a cream, ointment, liquid, spray, or gel, which may also contain ketamine and lidocaine, along with other agents which may be useful, such as cyclobenzaprine, amitriptyline, acyclovir, gabapentin, orphenadrine and other drugs used as NSAIDs or adjuvant, atypical or potentiators for pain treatment.

MATERIAL AND METHOD

Chemicals: - Ketoprofen powder, Ethanol, Chloroform, Sodium hydroxide, Phenolphthalein

Apparatus: - Conical flask 100ml, Stirrer, Beaker, Burette and burette stand Measuring cylinder, Filter Paper, Butter Paper.

Process description

Weigh and powder 20 tablets of Ketoprofen. Weigh accurately a quantity of the powder equivalent to 0.5g of ketoprofen and extract with 60 ml of chloroform for 15 minutes and filter wash the residue with three quantities. Gently evaporate the filtrate just to dry in a state of air. Dissolve the residue in 100 ml of ethanol (95%), previously neutralized to phenolphthalein solution, and titrate with 0.1M sodium hydroxide using phenolphthalein solution as indicator. Each ml of 0.1M sodium hydroxide is equivalent to 0.02543g of $C_{16}H_{14}O_3$.

Calculation

As we know,
1ml 0.1 M Sodium Hydroxide = 0.02543 g of Ketoprofen Now, calculating the percentage purity of each brand which is given below:

Ketofen

19.3 ml of 0.1 M NaOH = $19.3 \times 0.02543 = 0.490$ g of Ketoprofen

Now,

% purity of Ketoprofen = Amount of Ketoprofen / Weight of Sample $\times 100$

% purity of Ketoprofen = $0.490/0.5 \times 100 = 98\%$

Ketopatch

19.2 ml of 0.1 M NaOH = $19.2 \times 0.02543 = 0.488$ g of Ketoprofen

Now,

% purity of Ketoprofen = Amount of Ketoprofen / Weight of Sample $\times 100$

% purity of Ketoprofen = $0.488/0.5 \times 100 = 97.6\%$

Ostofen

19.5 ml of 0.1 M NaOH = $19.5 \times 0.02543 = 0.495$ g of Ketoprofen

Now,

% purity of Ketoprofen = Amount of Ketoprofen / Weight of Sample $\times 100$

% purity of Ketoprofen = $0.495/0.5 \times 100 = 99.0\%$

Redufen

18.9 ml of 0.1 M NaOH = $18.9 \times 0.02543 = 0.480$ g of Ketoprofen

Now,

% purity of Ketoprofen = Amount of Ketoprofen / Weight of Sample $\times 100$

% purity of Ketoprofen = $0.480/0.5 \times 100 = 96.0\%$

Ketoplast

19.1ml of 0.1 M NaOH = $19.1 \times 0.02543 = 0.4857$ g of Ketoprofen

Now,

% purity of Ketoprofen = Amount of Ketoprofen / Weight of Sample $\times 100$

% purity of Ketoprofen = $0.4857/0.5 \times 100 = 97.14\%$

S. No.	Brand Name	Percentage Purity (%)
1.	Ketofen	98 %
2.	Ketopatch	97.6 %
3.	Ostofen	99.0 %
4.	Redufen	96.0 %
5.	Ketoplast	97.14 %

RESULT

Taking into account the results of tests carried out during this study, all different productions of ketoprofen available in the Indian market meet the requirements of ISP. Although, in some brands they claim the percentage purity to be more than 99 %, but from our study we found it to be slight less. The percentage purity of the ketoprofen tablets of different brands which we took from the market was around 96-99 % which is sufficient enough considering some human errors which might have occurred during experiments.

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