Comparative Study on Acid Neutralizing Capacities and Prices of Selected Antacid Suspensions Available in Jaffna, Sri Lanka

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Introduction: Antacid suspensions (AAS) are most popularly prescribed and available over the counter for peptic ulcer diseases. Potency of antacids can be measured by Acid Neutralizing Capacity (ANC) test. ANC is defined as "number of milli equivalents (mEq) of 1N hydrochloric acid that is brought to a pH of 3.5 in 15 minutes by a unit dose of an antacid preparation". Most of the AAS consist of calcium, magnesium, aluminum hydroxides and magnesium trisilicate. Several antacid preparations are available in Sri Lanka with different acid neutralizing capacities and prices. Best AAS should have maximal ANC value with low unit dose cost. This comparative study was conducted to evaluate the ANC values and unit dose prices of different brands of AAS.

Materials and Methods: Ten different brands AAS that are available in most of the community pharmacies in Jaffna were selected for this study. They have coded from AA01 to AA10. ANC was measured according to USP30/NF25. 5 ml of AAS sample was accurately measured after shaking the bottle and 70ml of distilled water was added to it. Then the resultant content was stirred for 1min. 60ml of standardized 1N HCl was added and further stirred for 15mins at 300±30 rpm. Resultant content was titrated with standardized 0.5M NaOH. ANC in mEq was calculated using following equation;

$$mEq=(60\times N_{HCl})(V_{NaOH}\times N_{NaOH})$$

(N_{NaOH} and N_{HCl} are the normalities of NaOH and HCl, V_{NaOH} is volume of NaOH).
Simple descriptive statistics were used to describe data.

Results: ANC values of AAS were in the range of 6.35 mEq to 27.2 mEq and mean value was 18.50 mEq. Unit dose price of different AAS were in the range of 4.25LKR to 17.45 LKR and mean value was 7.13 LKR. Antacid AA04 had the highest ANC (27.20 mEq) followed by AA09 (26.09 mEq) and AA05 (25.93 mEq). Unit dose cost of the most of the AAS (80%) were more than 5 LKR per 5ml.

Discussion: Among AAS, antacids which showed higher ANC value mainly consist of magnesium and aluminum hydroxides in higher amounts. Unit dose costs of AAS were due to different compositions and country of origin of the suspensions. According to the requirement of Food and Drug Administration (FDA), ANC values all AAS were higher than 5 mEq. Antacid suspensions AA04 and AA05 have high ANC values with low cost of unit dose. Among all AAS, AA01 showed lowest ANC value (6.35 mEq) with highest unit dose cost.

Conclusion: This study revealed that, out of ten AAS, AA04 and AA05 showed high ANC values and low cost of unit dose and both can be considered as best AAS. It is recommended to include the ANC value in the label of suspensions so that correct choice of AAS can be prescribed by physicians to the appropriate patients.

References:

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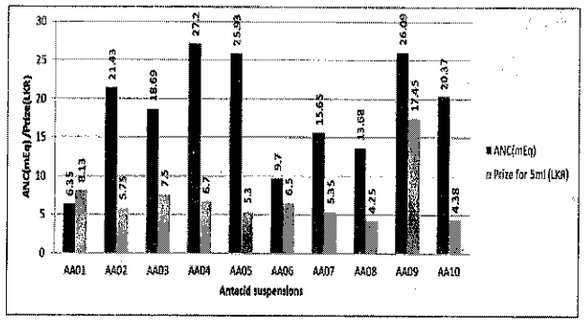

Figure 1: Antacid suspensions with ANC (mEq) and Prize (LKR).