

COMPARATIVE EVALUATION OF THE ANTI-FLATULENT ACTIVITY OF ANTACIDS

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Dimethicone is frequently included in antacid preparations as an antifoaming agent. There has recently been a tendency to increase the amount and the majority of commercially available liquid preparations now contain 125-150mg/5ml. There appears to be no published work showing that by increasing the concentration of dimethicone, the antifatulent activity is correspondingly improved, and indeed there is no meaningful test for antifatulent activity in routine use. The object of this work, therefore, was to develop a method of measuring antifatulent activity, and to assess the in-vitro antifoaming properties of 16 commercially available antacid preparations. Previous investigations (Rezac 1965) have made use of a static foam test for the measurement of foam height. In this investigation a dynamic test was devised based on the technique proposed by Harries et al (1978) for the measurement of the carminative action of volatile oils.

The apparatus comprised a glass column with a sintered glass disc fixed at the bottom. A 1% w/v solution of pepsin in 0.1M HCl was introduced into the column and air was forced through the disc to produce a foam, the air pressure being adjusted to produce a foam height of 75cm. 2.5ml of the antacid preparation was diluted to 10ml with 0.1M HCl and introduced into the pepsin solution at the bottom of the column. The minimum and maximum foam heights were recorded over a 2 minute period and, from the mean of 3 determinations, the percentage reduction in foam height was calculated. This was taken to be a measure of antifoaming activity and the results obtained are summarised in Table 1.

Table 1. Antifoaming Properties of Some Commercially Available Antacids.

Product	Mean Foam Height	% of mg/5ml Orig-Dimethicone	Product	Mean Foam Height	% of Orig-Dimethicone	mg/5ml Dimethicone
Andursil	0.83±0.62	1.1 150	Asilone Gel	25.16±4.84	33.5	125
Asilone	1.08±0.32	1.4 135	Polycrol Rorte	34.40±0.80	45.8	125
Polyalk	2.30±1.03	3.1 90	Maalox	60.20±1.18	80.8	-
Dioval	3.00±0.10	4.0 25	Dijex	63.83±6.25	85.1	-
Altacite Plus	4.90±0.24	6.5 125	Actal	65.16±4.09	86.9	-
Siloxyl	8.90±0.69	11.9 125	Mag.Hydrox.BP	71.70±1.43	95.6	-
Polycrol	11.65±1.85	15.9 25	Gelusil	74.00±2.45	98.7	-
Antasil	12.86±0.85	17.1 150	Altacite	74.60±5.30	99.6	-

Dimethicone significantly reduces foam height. This can be seen by comparing Altacite and Altacite Plus where the only difference in the formulation is the presence of 125mg/5ml dimethicone in the latter. However, by comparing those antacids containing the same amount of dimethicone, no relationship between the amount of dimethicone and the ability to reduce foam height could be demonstrated. Andursil and Antasil, both contain 150mg/5ml dimethicone but Andursil has the better antifoaming activity. These products differ in that Antasil contains twice as much active antacid ingredients as Andursil and it would seem, therefore, that ingredients do affect the antifoaming activity of dimethicone. The most viscous preparations, the protective antacid gels, gave smaller foam reductions than identical preparations formulated as suspensions; for example, Asilone Gel and Asilone Suspension. This was attributed to entrapment of dimethicone in the gel matrix thereby reducing its availability. In general, this method has enabled antifoaming activity to be quantified and its use is advocated as a routine quality control procedure.

Harries, N. and others (1978) J. Clin. Pharm. 2, 171-177.
Rezac, M (1966) J. Pharm. Sci. 55, 538-544.