



SPECIFIC GRAVITY DETERMINATION OF TEN OVER-THE-COUNTER PRODUCTS

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To the Editor, Commercially available products serve as good examples for the compounding pharmacist to produce quality compounded dosage forms. Their physical and chemical properties, when known, can provide valuable information for preparing similar dosage forms to patients. One of the important physical characteristics of preparations is their specific gravity. The specific gravity is defined as the density of the substance divided by the density of water at a given temperature. We purchased ten non-prescription products from a store in North Carolina. We tested three bottles of each product for their specific gravity using Densito 30PX (Mettler Toledo; Switzerland). The instrument is easy to use and allows calibration with a standard liquid (purified water or alcohol, U.S.P.) at different temperatures (0°C to 40°C). We measured each bottle of the same product thrice. The following products were tested for their specific gravity at room temperature: Alka-seltzer Plus (Bayer Health Care; Lot#-276698L); Children’s Advil (Wyeth Consumer Healthcare; Lot#-B58397); Children’s Motrin (McNeil Consumer Healthcare; Lot#-ABM011); Children’s Tylenol (McNeil Consumer Healthcare; Lot#-SSM015); Children’s Zyrtec (McNeil Consumer Healthcare; Lot# for bottle 1-809301; Lot# for bottles 2 and 3- 809302); Listerine (Lot#-0619LZ); Oral Health Rinse (TopCare; Lot#-90F1001); Scope (Proctor & Gamble; Lot#-95609187); Theraflu (Novartis Consumer Health; Lot# for bottles 1 and 3-10061769; Lot# for bottle 2-10063059); Tylenol Cold (McNeil Consumer Healthcare; Lot# for bottles 1 and 2-900009; Lot# for bottle 3-808311). The results are

summarized in Table 1. The specific gravity for Children’s Motrin, Children’s Tylenol, Listerine, and Scope agree with previously published values using a pycnometer (1.164, 1.306, 1.042, and 1.009, respectively).¹ In general, the presence of suspended solid particles increases the specific gravity (e.g., Childrens Tylenol), whereas diluted hydroalcoholic solutions (e.g., Scope) have specific gravity near 1.00 at room temperature.

Table 1. Specific Gravity of Ten Non-prescription Products at Room Temperature

Product Name	Specific Gravity (Mean ± S.D.) (n)
Alkaseltzer Plus Cold and Cough	1.142 ± 0.002 (9)
Childrens Advil	1.241 ± 0.003 (9)
Childrens Motrin	1.146 ± 0.0014 (9)
Childrens Tylenol	1.288 ± 0.0037 (9)
Childrens Zyrtec	1.207 ± 0.0019 (9)
Listerine	1.021 ± 0 (9)
Scope	0.973 ± 0.068 (9)
Theraflu Severe Cough and Cold	1.173 ± 0.00078 (9)
Topcare Oral Health Rinse	1.055 ± 0.002 (9)
Tylenol Cold Multi Symptom	1.087 ± 0.00053 (9)

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