

Thimerosal topical solution contains 0.1% thimerosal. Also present are ethylenediamine solution and sodium borate to maintain the alkalinity (usually pH 9.8 to 10.3) required for the solution's stability. Monoethanolamine is used as an additional stabilizer. The solution is affected by light and must be maintained in light-resistant containers. Commercial product: Merthiolate Solution (Lilly).

## Medicated Soaps and Shampoo Solutions

Medicated soaps and shampoos are liquid or solid preparations intended for topical application to the skin or scalp followed by subsequent rinsing with water. They are solution, emulsion, or surface-active products that readily form emulsions or foams upon the addition of water followed by rubbing. Incorporation of active pharmaceutical ingredients (APIs) in the soaps and shampoos combines the cleansing/degreasing abilities of the vehicle and facilitates the topical application of the API to affected areas of the body. The surface-active properties of the vehicle facilitate contact of the API with the skin or scalp. Medicated soap and shampoo formulations frequently contain antimicrobial agents to protect against bacteria, yeast, and mold contamination.

## VAGINAL AND RECTAL SOLUTIONS

### Vaginal Douches

Solutions may be prepared from powders as indicated earlier or from liquid solutions or liquid concentrates. In using liquid concentrates, the patient is instructed to add the prescribed amount of concentrate (usually a teaspoonful or capful) to a certain amount of warm water (frequently a quart). The resultant solution contains the appropriate amount of chemical agents in proper strength. The agents are similar to the ones described for douche powders. Examples are shown in Figure 13.4.

Powders are used to prepare solutions for vaginal douche, that is, for irrigation cleansing of the vagina. The powders themselves may be prepared and packaged in bulk or as unit packages. A unit package is designed to



**FIGURE 13.4** Products for vaginal use, including solution concentrates, powder, and aerosol foam with insert device.

contain the appropriate amount of powder to prepare the specified volume of douche solution. The bulk powders are used by the teaspoonful or tablespoonful in preparation of the desired solution. The user simply adds the prescribed amount of powder to the appropriate volume of warm water and stirs until dissolved. Among the components of douche powders are the following:

1. Boric acid or sodium borate
2. Astringents, for example, potassium, alum, ammonium alum, and zinc sulfate
3. Antimicrobials, for example, oxyquinoline sulfate and povidone iodine
4. Quaternary ammonium compounds, for example, benzethonium chloride
5. Detergents, for example, sodium lauryl sulfate
6. Oxidizing agents, for example, sodium perborate
7. Salts, for example, sodium citrate and sodium chloride
8. Aromatics, for example, menthol, thymol, eucalyptol, methyl salicylate, and phenol

Douche powders are used for their hygienic effects. A few douche powders containing specific therapeutic anti-infective agents such as those mentioned in the discussion of vaginal suppositories are used against monilial and trichomonal infections.