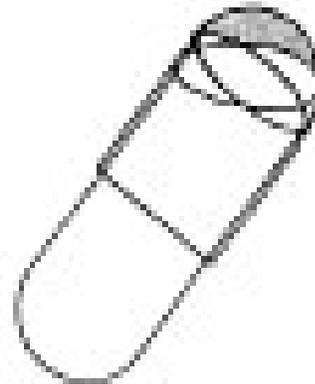


## **An Easier, Safer Method for Oral Dosing of Liquids: A How To Guide on the Use of Capsules.**

The use of capsules to administer liquids orally instead of the gavage is convenient, increases compliance and is safer. Capsules can be dosed by one person alone. Importantly, both the trauma of intubation and the risk of aspiration pneumonitis are eliminated. This application note reviews dosing procedures for liquids and presents a list of liquids and semi-solids which may be filled in capsules.



### **How to Dose Liquids in a Capsule.**

#### **Dosing Oils & Oil Based Suspensions**

A capsule doesn't soften or lose shape when filled with oil. Oil leakage from space between the cap and body can be prevented via two simple steps.

First, use lock ring capsules. The lock ring on the cap pinches the body of the capsule to form a seal between cap and body

Second, keep the capsule cap-end up after filling if it is not going to be dosed immediately. This can easily be done by using a test-tube rack. It is recommended as a precaution even though experiments have found minimal leakage for lock ring capsules left on their side for days.

#### **Dosing Aqueous Liquids and suspensions**

There are two methods to administer aqueous liquids and suspensions in a gelatin capsule.

##### **Fill prior to dosing**

Administer the capsule within 2-5 minutes after filling. The lock ring prevents leakage of aqueous liquids extremely effectively. The capsule can be filled from a precision dispenser. This technique has been used successfully by researchers in new drug testing.

Use of cold water e.g. 10 C will increase the time before softening to 20 minutes.

#### **Gelatin Powder Pre-fill**

Add gelatin powder to the capsule first. Then add the aqueous liquid. Addition of gelatin powder significantly delays capsule dissolution from the inside by the aqueous contents.

This method is described by Thompson and Cunningham in the Journal of Pharmaceutical Sciences, Vol. 64, No. 2, p. 320-2. Contact us for further information

## Liquid & Semi-Solid Carriers Which may Be Filled In Capsules. (A Partial List\*)

Arachis Oil	Carbowaxes
Castor Oil e.g. Cutina HR	Glycolesters
Coconut Oil e.g. Miglyol, Neobee	Glycerol esters e.g. Imwitor, Myverol
Cotton Seed Oil	Macrogel esters e.g. Gelucire, Myrj
Corn Oil	Polyethylene glycols – higher molecular weights are more stable e.g. 400-20000
Maize Oil	Poloxamers e.g. Pluronic
Olive Oil	Sorbitan Derivatives e.g. Spans, Tweens
Paraffin Oil	
Silicone Oil	
Soya Oil	Cetosteryl Alcohol
Theobroma Oil	Cetyl Alcohol
Hydrogenated Vegetable Oil	
	Emulsifiers e.g. Beeswax, Lecithin

\* Special Thanks to Dr. E. T. Cole, Capsugel, Switzerland

### Note on Stability:

For optimum results, conduct a stability test of capsules and carrier for the number of days between filling and actual dosing: and check capsule dissolution in-vitro in 37<sup>0</sup> C water, preferably using the U.S., European or Japanese Pharmacopeia basket-type disintegration test apparatus for hard gelatin capsules. For example, if the capsules may be stored filled up to 7 days prior to dosing, the stability test should be done for a minimum of 7 days and capsule dissolution should be confirmed after 7 days storage. Additional testing as required by local country Good Laboratory Practices for the preparation of test substances in carrier should be conducted. Water, lower glycols and deliquescent substances cause softening of the gelatin shell and should be filled into capsules just prior to dosing.

Lower alcohols, lower ethers and lower ketones pass through the gelatin shell over time and based on stability test data the maximum time between filling and dosing should be checked.

Aldehydes, strong acids or bases react with the gelatin shell.

For additional information or free samples, please contact us.