TIE LINE OF THREE COMPONENT SYSTEMS

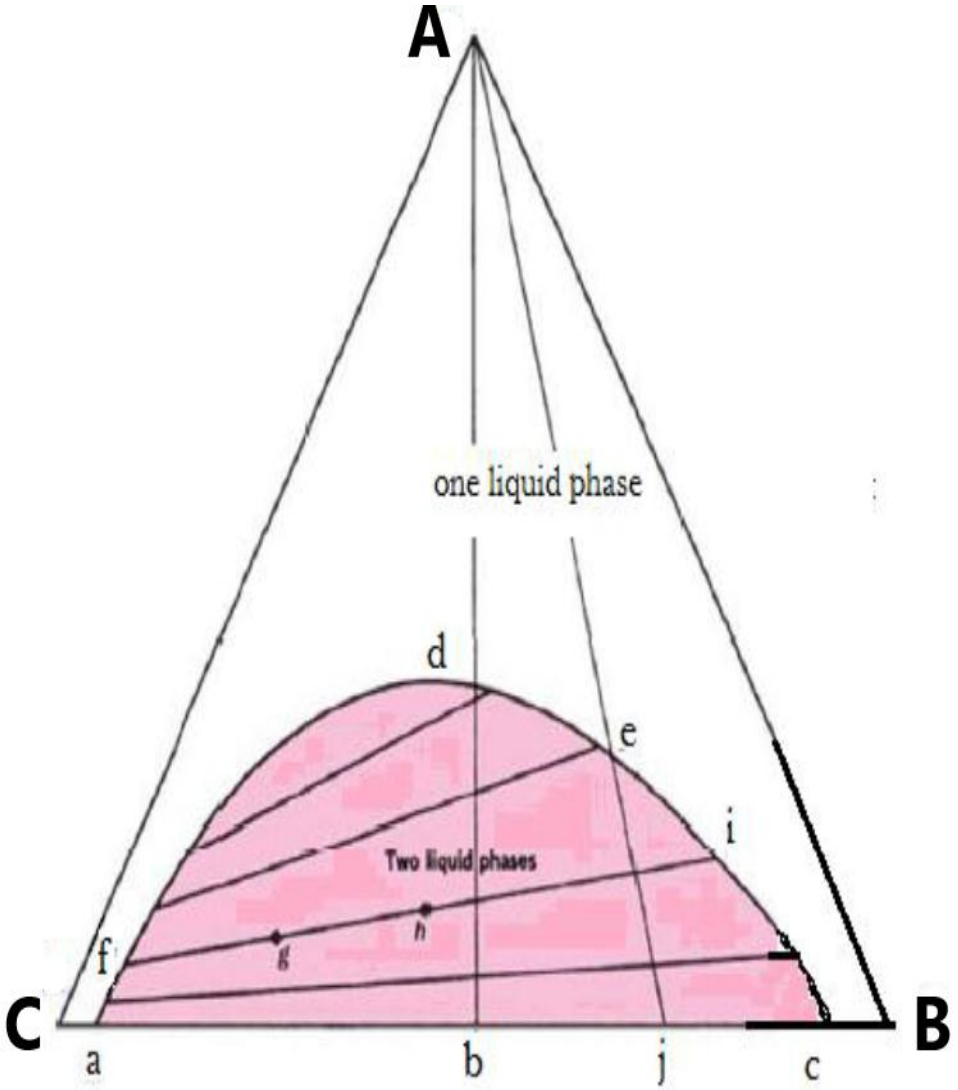
2nd stage/ First semester-Lab.5

M.Sc. Pharmaceutics
Ph. Laith zainee

Tie line of three component system

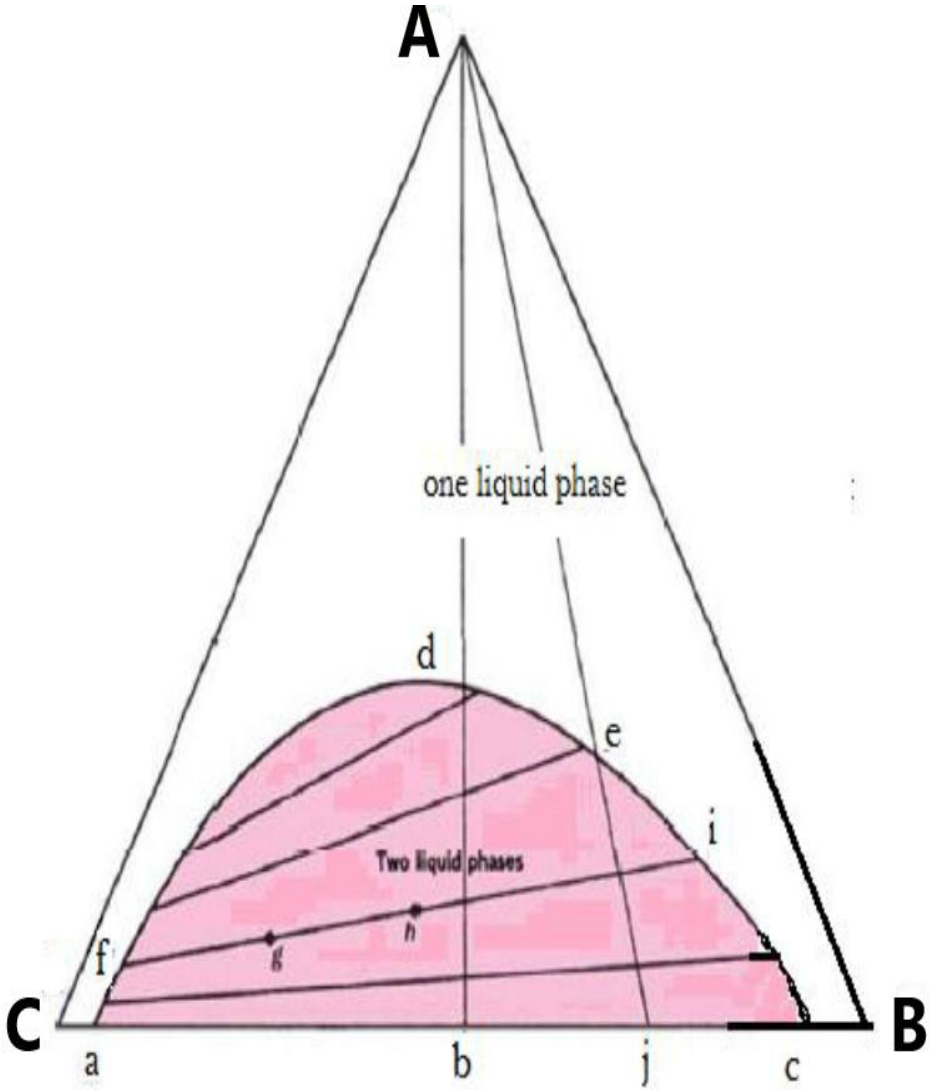
Suppose that A, B, and C represent acetic acid, water and chloroform respectively.

The curve **afdeic** frequently termed the binodal curve, marks the extent of the two-phase region. The reminder of the triangular contains one liquid phase.

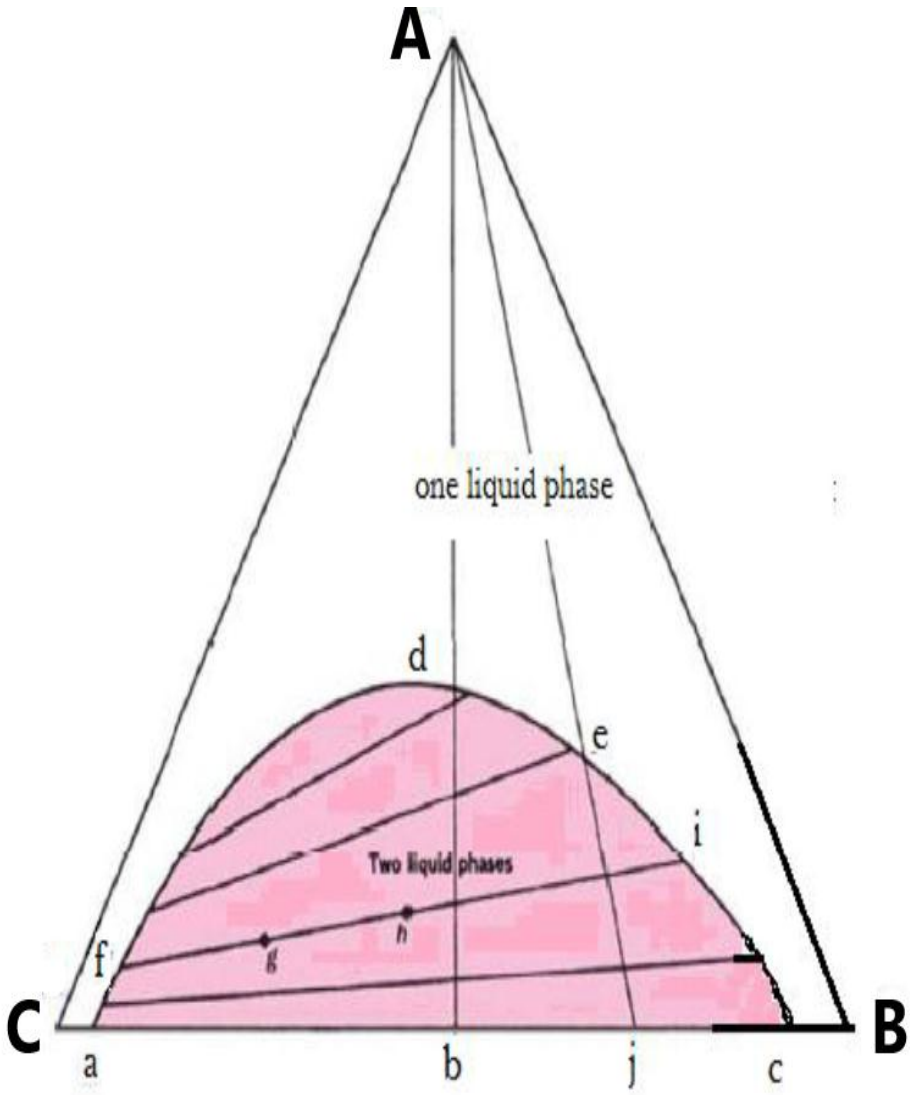


Properties of the tie line of three component system

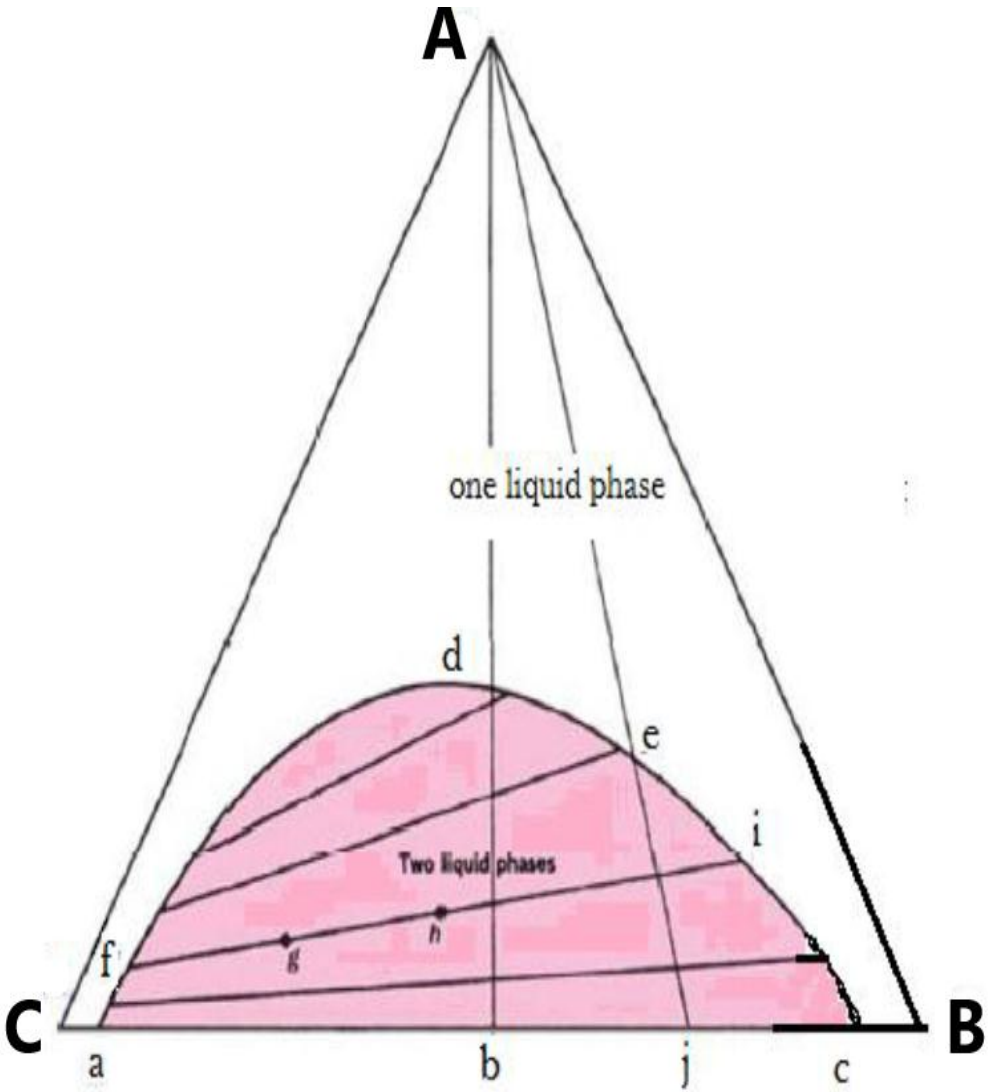
1/ The properties of tie lines for binary systems still apply, and systems **g** and **h** prepared along the tie line **fi** are both give rise to two conjugated phases having the constant compositions denoted by the points f and i.



2/ The tie line with the binodal are not necessarily parallel to one another or to the base line as in binary systems , in fact the direction of the tie line are related to the shape of binodal curve , which in turn depends on the solubility of the third component (i.e. acetic acid) in the other two components .



3/ Only when the added component acts equally on the other two component to bring them into solution will the binodal perfectly symmetrical & the tie line run parallel to the base line.



Experiment

Title: Tie line of Three Components System

Aim:

-To draw the binodal curve of the three components system

-To obtain the tie line of three components system

Procedure

1. Draw the binodal curve

- Use a triangular (ternary) diagram with each corner representing 100% of one component (e.g., chloroform, water, and acetic acid).
- Plot the data points where one phase is observed (these points form the binodal curve).
- Connect these points to form the curve that encloses the two-phase region.

2. Plot the tie line of three components system

- Draw a line connecting two points on the binodal curve. These lines are the tie lines.

Results

Concentration	Weight percentage of each component (% w/w)		
	Acetic acid	**Chloroform**	**Water**
5%	34	3	63
20%			
40%			
60%			
90%			
95%			

Thank You