



# Criteria for Buffers

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## (a) Chemical factors-

- 1. The buffer system should not form complexes with the active ingredients.
- 2. It should not participate in redox reactions.
- 3. It should not alter the solubility of other ingredients.
- 4. It should not undergo reaction with the other chemicals in the preparation. It should not undergo any acid-base reaction other than that required as a part of the buffer functions.
- 5. It should be safe and should not interfere in the pharmacological actions of the active ingredients.
- 6. The buffer system must possess reasonable chemical stability. Volatile species like  $\text{NH}_3$  and  $\text{CO}_2$  should be avoided in buffer because its loss will alter the  $\text{pH}$ .





### 3. Contamination by microorganisms-

- Many buffer system support microbial growth because they can serve as nutrient media for moulds and microorganisms particularly when the pH becomes close to neutrality. Contamination by microorganisms poses no problem in acid buffer below a pH of about 3 because strong acid solutions are germicidal. Similarly, an alkaline pH greater than 10 poses no problems with microorganisms because the strong base is having action on protein of the microorganisms.
- Many buffer systems using organic acids or inorganic buffers like phosphate buffer acts as good growth media for microorganisms.
- Contamination can be indicated by clouding of a clear solution. Solutions of such compounds could be preserved by adding low concentration of quaternary ammonium antimicrobial agent, e.g 0.002% of benzalkonium chloride.

