Human stomach contains approximately one billion parietal cells that secrete 0.16 M hydrochloric acid (HCl) into the gastric lumen in response to three principal physiological stimuli:

- Acetylcoline : released by vagal postganglionic neurons and stimulate hydrogen ion production directly via a parietal cell muscarinic M3 receptor. with this intention it is considered the chief neurocrine transmitter .
- Histamine : paracrine transmitter which binds to H2-specific receptors on the parietal cell basolateral membrane, while gastrin, secreted from antral G-cells, comprises the primary endocrine pathway .
- Gastrin : stimulate histamine secretion from enterochromaffin-like cells in the proximate vicinity of parietal cells. Additionally it directly stimulate production of hydrogen ions.

Interactions among these three pathways are coordinated to promote or inhibit hydrogen ion generation (De Graef J., *et al*., 1986).

Physiology of acid secretion has primarily been divided to three main phases :

- Cephalic phase : taste, smell, sight of food, and swallowing are the main activators of this phase. It is mediated mostly by cholinergic/vagal mechanisms .
- Gastric phase :it is a result of the chemical effects of food and distension of the stomach. Gastrin appears to be the major mediator since the response to food is largely inhibited by immunoneutralizing or blocking gastrin action at its receptors .
- Intestinal phase : It points out only a small proportion of the acid secretory response to a meal; its mediators remain controversial (McQuaid KR., *et al.*, 2005).