**CHLOROPHYLL**

Chlorophylls are green lipid-soluble plant pigments that contain a porphyrin ring complexed to magnesium. Chemically, chlorophyll is a tetrapyrole ring in which magnesium is centrally placed.

During vegetable processing, chlorophyll is degraded in the acidic medium and converted into pheophytin by reduction reaction.

Pheophytinisation is a reduction process i.e. the **gain** of **hydrogen** to a **substance.** Hydrogen comes from the organic acids (tartaric, acetic) in vegetable. This will make brilliant green vegetable to become dull olive brown.

Pheophytinisation reaction is an index of freshness and degree of cooking.

The draw backs of this reaction include: colour loss, reduced market value and acceptability (economic loss), loss of nutrient- the nutrient in this vegetable has been lost that is magnessium. This can lead to its deficiency symptoms such as muscular disorders, weak bone formation, cramps, convulsions, mental and emotional disorders at times

**Control of pheophytinisation reaction:**

Since the reaction takes place in an acidic medium, it can be controlled by making the medium alkaline by addition of trona.

Avoid continuous heating or over-cooking of vegetable. Always prepare it very close to consumption time to avoid re-heating.

Chlorophyllide formation: An enzyme called chlorophyllase catalyses the degradation of chlorophyll and a compound called chlorophyllide is formed. This takes place when uncooked vegetable is stored.

Under certain conditions of heat (low heat) and acidic pH, vegetables may also lose magnesium atom due to chlorophllase activity. This will lead to formation of a chlorophyll derivative called pheophorbide. This is a common cause of colour change from green to dull brown in canned green beans.

Chlorophyll bleaching: This occurs when vegetable is put under direct sunlight and all the chlorophyll is lost. Such vegetable is not good for eating but for the production of straw for animal feed.

Application of chlorophyll: It can be extracted and used as a cclourant.

Ripening of fruit is a respiratory activity. Ripening is a physiological change in fruit an vegetable that involve a lotof series of biochemical changes that involve colour, texture, general acceptability.

Climacteric fruits are those fruits which show pronounced increase in respiration coincident with ripening; that is, they have a respiratory climacteric. This is in 3 stages:

Pre-climacteric stage- matured green stage of fruit

Climacteric stage- ripened stage

Post-climacteric stage- Senescent or over-ripe

In respiratory climacteric, the fruits undergo a slow rate of respiration to a sudden rise getting to the climax and a sharp decline. Examples of climacteric fruits include banana, mango, tomato and pawpaw.

Non-climacteric fruits undergo uniform and steady rate of respiration activity. Examples include orange, lemon, pineapple