

Introduction

Bacterial Cells causes damage host cells by three mechanism:

- Direct Damage
- Toxins*
- Hypersensitivity Reactions

Toxins: Poisonous substances produced by pathogenic bacteria as soluble antigen and causes **harmful effect** and have molecular weights (1000 -100,000 Da).

Toxigenicity: Ability of microbes to produce toxins.

Toxemia: Presence of toxins in the **blood**.

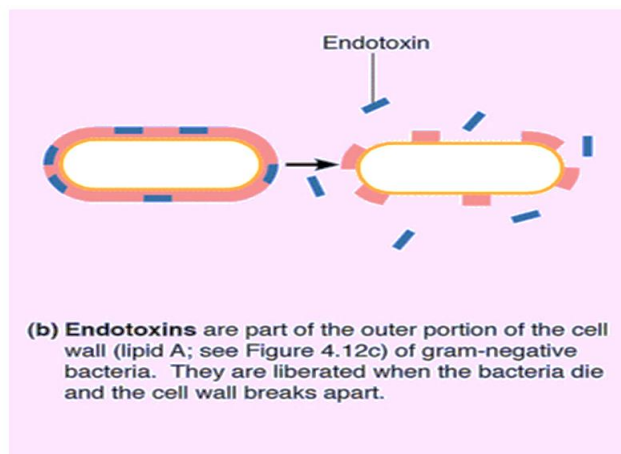
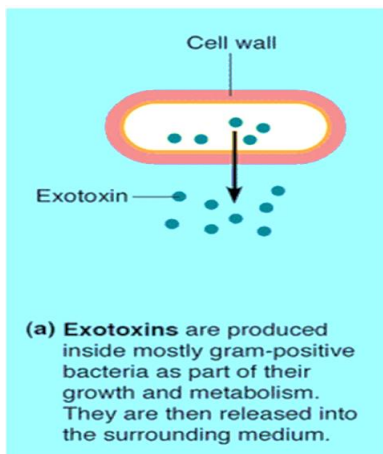
Toxoids: A toxin of a pathogenic organism treated with **heat** or **chemicals**, so as to destroy its toxicity (**an inactivated toxin**) but leave it capable of inducing the formation of antibodies on injection.

Toxicological test LD₅₀: is a methods are necessary to assess the hazard and safety of various substances such as medicine, consumer products and industrial chemicals.

Toxicology test: a group of laboratory analyses that are used to determine the presence of poisons and other potentially toxic agents in blood, urine, or other bodily substances.

Types of bacterial toxin

1. **Exotoxins:** protein_ release into extracellular environment of bacteria.
2. **Endotoxins:** Lipopolysaccharide_ associated with Gram negative bacteria cell wall.



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Symptoms

All produce the same signs and symptoms including Chills, fever, weakness, general aches, blood clotting, tissue death, shock, and even death. **Fever** is a pyrogenic response is caused by **endotoxins**.

Toxin effects

Type of toxin according to their effect:

- 1- **Erythrogenic-toxins** Causes **Rash of Scarlet Fever** by *Streptococcus pyogenes*.
- 2- **Neuro-toxin** causes **Muscle Spasms of Tetanus** by *Clostridium tetani*
- 3- **Enterotoxin** Causes **Watery Diarrhea** by *Vibrio*.
- 4- **Staphylococcal toxins** Causes **Scalded Skin Syndrome & Toxic Shock Syndrome** by *Staphylococcus aureus*.

Laboratory Diagnosis of toxin infection

Specimen sending to the Laboratory.

1. Serum when septicemia accord.
2. Skin scraping in case infections caused by *Streptococcus pyogenes*.
3. Stool: In case infection caused by *shigalla*.
4. Swab: Collected from (nose, eye, trachea, vaginal, Rectal).
5. Organs (colon, intestinal tract, lung).
6. Urine.
7. Food