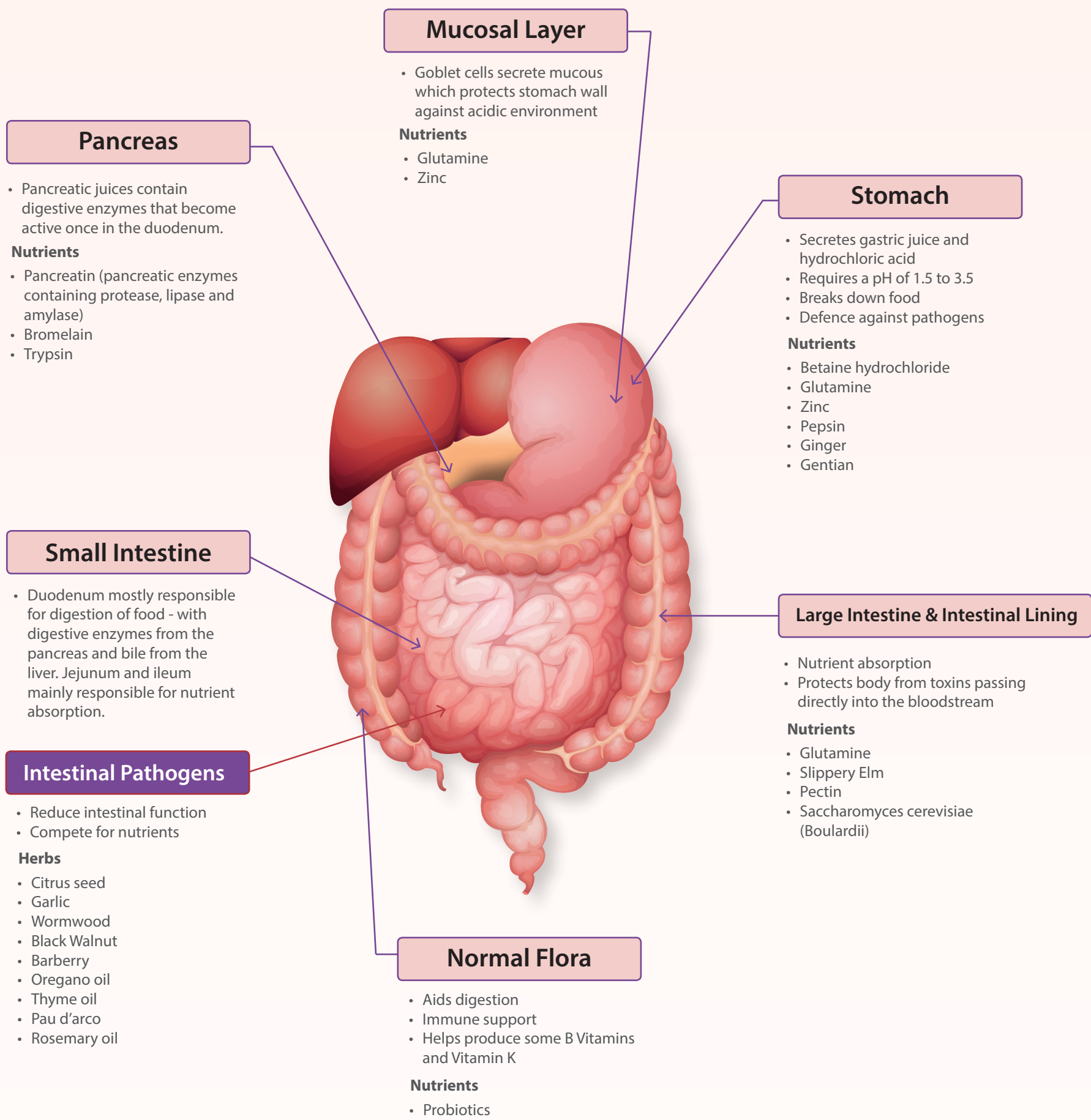


# Gut Health & Detoxification

## Nutrients Supporting The Gastrointestinal System



## Steps to Detoxification

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
<b>Detox Primer</b> 1-2 weeks	<b>Detoxification Program</b> Restore gut ecology 2-4 weeks	<b>Detoxification Program</b> Gut repair and liver detoxification 2-4 weeks (or as long as needed)	<b>Removal of Toxins</b> 2-4 weeks (or as long as required)	<b>Remove Heavy Metal / Toxic Burden</b> 3-12 months (or as required)
Preparation stage to reduce adverse effects of detoxification reactions PRIOR to starting a detoxification program.	Remove excess adverse pathogens whilst preserving beneficial bacteria.	Repair mucosal integrity and facilitate liver detoxification.	Support the removal of toxins produced during Phase II and III, via the kidneys, to be excreted through bile produced in the liver.	Support the removal of heavy metals and chelation processes. If heavy metal exposure is suspected chelation should commence from Step 2.

# The Detoxification Process

## Nutrients Supporting The Liver, Kidneys & Bladder

### Detoxification Phases

#### Phase I

- Cytochrome P450 enzymes modify toxins to produce reactive intermediate metabolites (free radicals)

#### Phase II

- Detoxify intermediate metabolites from Phase I so they can be excreted from the body

#### Six conjugation reactions:

- Methylation
- Glucuronidation
- Sulfation
- Acetylation
- Glutathione conjugation
- Amino acid conjugation

#### Phase III

- Reduces toxic load within the small intestine and supports elimination of xenobiotics prior to Phase I detoxification
- Transportation of conjugated metabolites after Phase II detoxification

### Toxins

Alcohol  
Drugs and medications  
Preservatives and additives  
Pesticides  
Micro-organisms  
Cigarette smoke  
Compounds in Barbecued meat  
Heavy metals

### Phase I (Transformation)

Reactive Intermediate metabolites  
E.g. Free radicals - Reactive Oxygen Species

### Phase II (Conjugation)

Less toxic substances

### Phase III (Transport proteins)

xenobiotic detoxification

### Removal of toxins

Some toxins are transported in bile and sent to the gallbladder for storage. Back in the duodenum, the toxins pass through the digestive tract and are eliminated in the stool as waste.

Toxins released from tissues into the blood are then excreted via kidneys and bladder.

## Liver

### Nutrients for Phase I/ Intermediate Metabolites

B Vitamins	Molybdenum
Bilberry	Hesperidin
Grape Seed	Zinc
Vitamin C	Vitamin E
Selenium	Manganese
Broccoli Sprout	Garlic

### Nutrients for Phase II

Glycine	Taurine
Glutamine	Cysteine
Methionine	Choline
Magnesium	Parsley
Inositol	Maritime Pine Bark

### Nutrients for Phase III

Calcium-d-glucarate  
Broccoli sprout  
Maritime Pine Bark  
Glutathione

## Large Intestine

### Nutrients for Toxin Removal

#### Nutrients

Glutamine  
Slippery Elm  
Pectin  
Saccharomyces cerevisiae (Boulardii)

Stool

## Kidneys & Bladder

### Nutrients for Toxin Removal

#### Nutrients

Carnitine	Chromium
CoQ10	Selenium
Lipoic Acid	Zinc
B Vitamins	Vitamin C
Molybdenum	Manganese

Urine