

Bile Salts Mixture (i23019)

A selective inhibitor of Gram-positive bacteria that does not impede the growth of *Enterobacteriaceae*.

Industry: Culture media

Principles & Uses

Bile salts mixture, an essential component in various microbiological culture media, plays a vital role in selective isolation and cultivation of enteric bacteria. This refined grade of bile salt mixture is derived through hydrolysis of bile salts, resulting in a white, free-flowing powder. It exhibits unique inhibitory properties specifically targeting Gram-positive bacteria, like *streptococci* and *staphylococci*, enhancing the media's selectivity for bile-tolerant enteric bacteria, such as *coliforms*.

The use of bile salts mixture in media like MacConkey Agar and Salmonella Shigella Agar is recommended due to its ability to inhibit the growth of Gram-positive bacteria while allowing the growth of *Enterobacteriaceae*. The application of this mixture doesn't interfere with indicator dyes, ensuring accurate color-based differentiation.

Bile salts mixture is obtained from fresh bile, which undergoes multiple extractions to preserve its inhibitory qualities. When integrated into culture media, it forms a clear, colorless solution, enhancing the medium's selectivity for the desired bacteria. Additionally, in media supplemented with bile salts, the fermenting of lactose by *coliform* bacteria may produce a slight precipitate. This feature contributes to the reliability and effectiveness of culture media in microbiological applications.

Composition

Bile Salts $\geq 45\%$ (expressed as cholic acid), Moisture $\leq 6.0\%$

Quality Control

Dehydrated Appearance: white, homogenous, free flowing powder.

Solubility: Freely soluble in distilled/purified water

Solution Appearance: clear colorless solution that produces foam if shaken.

pH of 1% solution at 25 °C: 7.0 ± 0.5

Cultural Response

The cultural response was assessed by preparing MacConkey Agar with the inclusion of bile salts mixture as an ingredient, followed by incubation at 35-37°C for 18-24 hours.

Organism (ATCC*)	Growth	Colony color
<i>Escherichia coli</i> (25922)	Good	Pink to red / bile precipitate
<i>Enterococcus faecalis</i> (29212)	Fair to good	Colorless to pink
<i>Enterobacter aerogenes</i> (13048)	Good	Pink to red
<i>Salmonella enterica</i> (14028)	Good	Colorless
<i>Shigella flexneri</i> (12022)	Fair to good	Colorless
<i>Staphylococcus aureus</i> (25923)	Inhibited	-

Storage

Very hygroscopic. Keep container tightly closed. Store below 30 °C.