Novyrate® EB

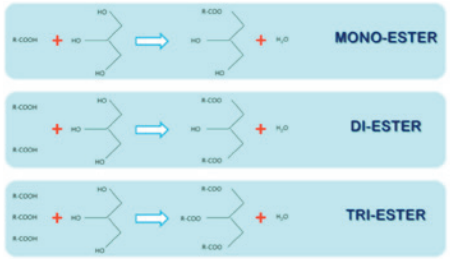
GUT-ACTIVE

(Esterified butyrin)

Esterified Butyrins

Esterified butyrins are combined molecules composed out of a glycerol structure and butyrate molecules. The final result of the esterification is a combination of mono-, di- and tributyrins which act as a source of butyrate molecules in the intestinal tract. Based on the molecules origin, it is easy to understand that these "fat-type" structures can only be digested in the presence of the digestive enzyme lipase. By definition, this guarantees full stomach bypass properties at the level of the stomach while being activated after pancreatic lipase has been added.

During the esterification process, it is of utmost importance that the reaction is controlled carefully in order to guarantee the desired stability of the product. A correct catalyst, the right esterification speed and the final purification step need expertise and deep chemical knowledge, resulting in a high concentrated, pure and clear product with a high stability in time and during pelleting process, guaranteed without the typical smell of butyric acid.



Antibacterial power (in vitro)Acids vs. Mono-Esters

Key features and benefits of Mono-esters and Di-Tri esters

Different esters forms have different activity and benefits. Esters are NOT pH dependent (like organic acids). There is value in combining.

Mono-esters	Di-Tri esters
• pH stable (+ passes the stomach & crop) • Small molecule (+ easy uptake by bacteria leading to internal hydrolysis and effective anti-bacterial activity) • 1 side chain only (+ escape from endogenous lipase) • Uptake in the bloodstream (+ action within the whole metabolism) • Relative low supply of butyrate • Water soluble	• pH stable (+ passes the stomach & crop) • Bigger molecule (no bacterial uptake) • 2 or 3 side chains (hydrolysis by endogenous lipase) • High supply of butyrate (+)

NOVYRATE® EB is

- Free-flowing
- With NO smell
- Non-corrosive (no ADR)
- Heat stable

NOVYRATE® EB combines butyrate supply (quantity) and strong antibacterial activities (quality)

MIC	S. Typhimurium	E. Coli
Butyric acid	1:400	1:400
Mono-esterified butyrins	1:1600	1:800

MIC concentrations for Mono-butyrin (Innovad 2012)