

LIST OF BIOLOGICS SUBSTANCE GENERALLY RECOGNISED AS SAFE

BIOLOGICS SUBSTANCE	ORIGIN
Acetic acid	Acetobacter species.
	<i>chemical process</i>
Alginic acid	brown algae
Aspartic proteinase	<i>Rhizomucor miehei</i> var <i>Cooney et Emerson</i>
Astaxanthin	<i>Haematococcus Pluvialis</i> Algae <i>Pracoccus carotinifaciens</i>
Ammonium alginate	brown algae
Brewers's yeast	<i>Saccharomyces cerevisiae</i>
	<i>Kluyveromyces fragilis</i>
Citric acid	<i>Aspergillus niger</i>
	<i>Candida guilliermondii</i>
	<i>Candida lipolytica</i>
Calcium alginate	brown algae
Chymosin	<i>Escherichia coli</i> K-12, <i>Kluyveromyces marxianus</i> var. <i>lactis</i> or <i>Aspergillus niger</i> var. <i>awamori</i>
Cyanocobalamin, vitamin B12	<i>Ensifer adhaerens</i> <i>Sinorhizobium fredii</i>
Dextrans	<i>Leuconostoc mesenteroides</i> strain NRRL B-512(F)
Glucono delta-lactone	<i>Aspergillus niger</i>
	<i>Acetobactor suboxydans</i>
Glutamic acid	<i>Corynebacterium glutamicum</i>
Gibberellic acid	<i>Fusarium moniliforme</i>
Isoleucine	<i>Brevibacterium lactofermentum</i>
Lactic acid	<i>Bacillus smithii</i>
	<i>Caldibacillus thermoamylovorans</i> (formerly known as <i>Bacillus thermoamylovorans</i>)
	<i>Enterococcus faecium</i>
	<i>Enterococcus faecalis</i>
	<i>Lactobacillus acidophilus</i>
	<i>Lactobacillus lactis</i>
	<i>Lactobacillus delbrueckii</i>
	<i>Lactobacillus leichmannii</i>
	<i>Lactobacillus salivarius</i>
	<i>Streptococcus bovis</i>

	<i>Streptococcus bovis</i>
	<i>Lactobacillus bavaricus</i>
	<i>Lactobacillus casei</i>
	<i>Lactobacillus coryniformis</i>
	<i>Lactobacillus curvatus</i>
	<i>Lactobacillus plantarum</i>
	<i>Lactobacillus sake</i>
	<i>Lactobacillus brevis</i>
	<i>Lactobacillus buchneri</i>
	<i>Lactobacillus cellobiosus</i>
	<i>Lactobacillus confusus</i>
	<i>Lactobacillus coprophilus</i>
	<i>Lactobacillus fermentatum</i>
	<i>Lactobacillus sanfrancisco</i>
	<i>Leuconostoc dextranicum</i>
	<i>Leuconostoc mesenteroides</i>
	<i>Leuconostoc paramesenteroides</i>
	<i>Parageobacillus thermoglucosidasius</i>
	<i>Weizmannia coagulans</i> (formerly known as <i>Bacillus coagulans</i>)
Lipopolysaccharide (LPS)	<i>Pantoea agglomerans</i>
Propionic acid	Hasil penapaian bakteria
Riboflavin	<i>Eremothecium ashbyii</i>
	<i>Bacillus subtilis</i>
Sorbose	<i>Acetobacter xylinum</i>
	<i>Acetobacter suboxydans</i>
Vitamin B12	<i>Propionibacterium</i>
Vitamin K	<i>Bacillus Subtilis</i>
Xanthan Gum	<i>Xanthomonas campestris</i>
Yeast	<i>Cyberlindnera jadinii</i>

References/ Supporting documents – Published Reports on Product Safety:

1. Code of Federal Regulations Title 21, U.S FDA Regulation
2. Comparative analysis of the *Corynebacterium glutamicum* group and complete genomes sequence of strain R
3. LIST OF CODEX SPECIFICATIONS FOR FOOD ADDITIVES
4. J. Gen. Appl. Microbiol., 13, 279--301 (1967), TAXONOMICAL STUDIES ON GLUTAMIC ACID-PRODUCING BACTERIA
5. Safety and efficacy of a feed additive consisting of L-methionine produced by the combined activities of *Corynebacterium glutamicum* KCCM 80245 and *Escherichia coli* KCCM 80246 for all animal species (CJ Europe GmbH). *Scientific Opinion EFSA Journal* 2022; 20(4):7247, 23 March 2022.
6. Final Decision Document: TSCA Section 5(H)(4) Exemption for *Escherichia coli* K-12. *United States Environmental Protection Agency*, February 1997.
7. Attachment 1 – Final Risk Assessment of *Escherichia coli* K-12 Derivatives. *United States Environmental Protection Agency*, February 1997.
8. Safety and efficacy of a feed additive consisting of L-isoleucine produced by *Corynebacterium glutamicum* KCCM 80185 for all animal species (CJ Europe GmbH). *Scientific Opinion EFSA Journal* 2021;19(12):6977, 10 November 2021.