

Hightlights

Different modes of microbial addition formed their own unique microbial communities;

Different strains have similar effects to inhibit *Firmicutes* production;

Fermented sauerkraut without microbes added was richer in amino acids and organic acids;

Alcohols, esters and acids were more abundant in fermented sauerkraut with microbes added;

Cystine, ascorbic acid and alcohols were closely associated with a wide range of microorganisms in sauerkraut.