

# Acidification

Balanced solutions from Corbion Purac



- Balanced flavor management
- Perfect balance between low pH and mild taste
- Effective pH regulation
- Improved microbiological stability

Acidification has been used for centuries to preserve foods and to provide a specific taste to food products. With their great taste, traditional, acidified food products such as pickles, sauces, dressings, fresh cheese and yogurt remain a consistent favorite with consumers.

## Mild flavor

Each organic acid has a very different influence on taste when used as an acidulant. For instance the flavor profiles of acetic and citric acid are sharp, whereas lactic acid has a mild acidic taste as well as a long-lasting flavor profile (see [figure 1](#)).

PURAC® lactic acid is perfect for enhancing flavors, such as tomato, green herbs, pepper and dairy. Using lactic acid or a lactic acid blend provides a perfect balance between low pH, mild taste and effective anti-microbial activity.

## Acid intensity

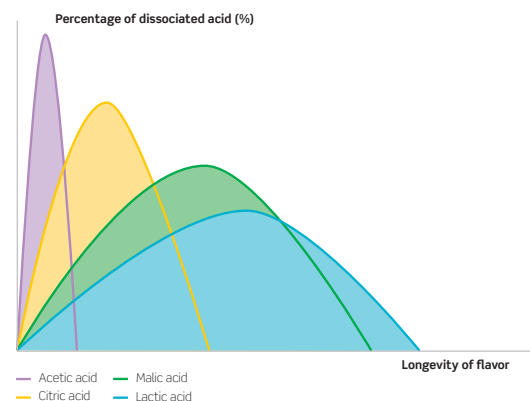


Figure 1

# Acidification

Balanced solutions from Corbion Purac



## Highly efficient

The specific pH influence and sourness of organic acids can be explained by the acid's pKa value. In short, the pKa is the pH at which 50% of the acid is undissociated and 50% is dissociated. Typically an acid with a low pKa (<4.0) is a better acid for regulating pH. Lactic acid has a lower pKa value (3.86) than acetic acid (pKa = 4.76) and is therefore a stronger acidifier.

Figure 2 demonstrates the dissociation curves of lactic and acetic acid. Figure 3 illustrates acidulation in a dressing with either lactic acid or acetic acid. Taking into account the difference in pKa values, more acetic acid than lactic acid is needed to decrease the pH to 3.2. Based on 100% acid, 0.4%w/w of acetic acid was required to drop the pH to 3.2 whereas only 0.12% w/w of PURAC was sufficient to lower the pH to pH 3.2. Thus, our PURAC portfolio enables the manufacturer to balance taste (acidity) and pH.

## Microbiological stability

Corbion Purac's portfolio is designed to incorporate optimal hurdles to make food shelf-stable and safe. In addition to being an effective acidulant, PURAC has important antimicrobial properties. PURAC and PURASAL (sodium/potassium lactate), are effective against a wide variety of bacteria, including *Listeria monocytogenes* and *Pseudomonas*. Its action complements that of other organic acids, which are effective against yeasts and molds. Blending PURAC or PURASAL with other acids can therefore enhance overall microbial efficacy and boost flavor, counteracting the sharpness of the other acids.

Figure 4 illustrates the effect of using lactic acid in combination with acetic acid in a turkey salad at pH 5 and 7°C/ 45°F. A blend with PURASAL S inhibited the growth of *Lactobacillus plantarum* and provided a more acceptable acidic flavor profile. At a pH <3.7 PURAC BF, our lactic acid buffer can be the best choice to stabilize the low pH of the product.

## Percentage of dissociated acid

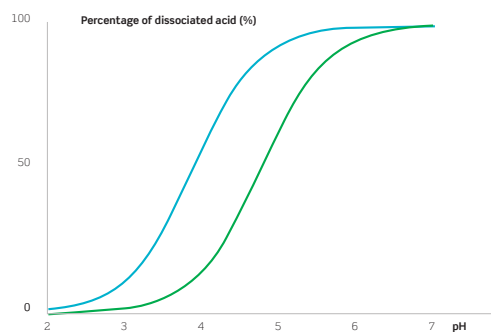


Figure 2

## Acidulation of a dressing

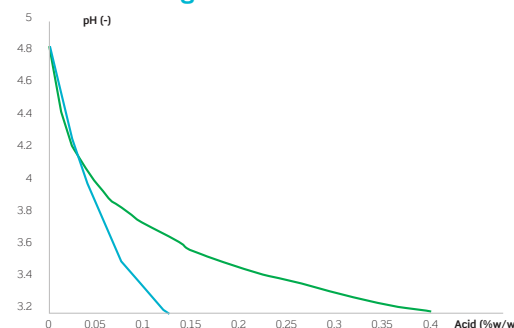


Figure 3

## Lactobacillus plantarum in a turkey salad at 7°C

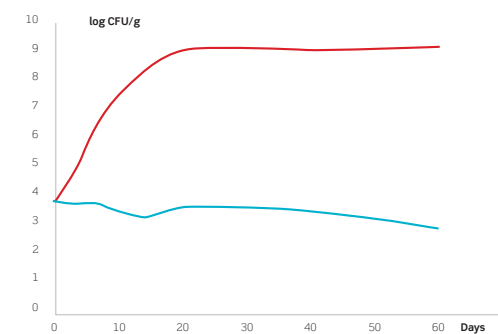


Figure 4

Product description	Purac product	pH (10%)	Benefit
Lactic Acid	PURAC® FCC	<3	Available in different concentrations to meet your need for pH regulation, while providing a mild acidic flavor
Lactates and buffers	PURAC® BF	3 to 3.7	Buffered lactic acid solutions for pH regulation at a low pH
	PURASAL®	3.7 to 6	Sodium/potassium lactate solution for pH regulation at a medium to high pH
Lactic acid blends	PURAC® CL	2.0 to 2.6	Blend with citric acid for a sharper flavor
	PURAC® CLM	2.0 to 2.6	Blend with citric and malic acid for a long-lasting sharp flavor
	OptiForm®	5.0 to 9.5	Blends with acetic acid for pH regulation at pH above 5 with a mild acid taste

Interested in our solutions? [Go to corbion.com/acidification](http://Go to corbion.com/acidification)



With over 80 years of fermentation expertise and the use of natural raw materials to produce exceptional food and beverage ingredients, Corbion Purac has a wealth of expertise in the world of biobased food ingredients. Corbion is the global market leader in lactic acid, lactic acid derivatives and lactides, and a leading company in functional blends containing enzymes, emulsifiers, minerals and vitamins. Corbion operates 10 production plants, in the USA, the Netherlands, Spain, Brazil and Thailand, and markets its products through a worldwide network of sales offices and distributors.

© Copyright 2013 Corbion. All rights reserved. No part of this publication may be copied, downloaded, reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopied, recorded or otherwise, without permission of the publisher. No representation or warranty is made as to the truth or accuracy of any data, information or opinions contained herein or as to their suitability for any purpose, condition or application. None of the data, information or opinions herein may be relied upon for any purpose or reason. Corbion disclaims any liability, damages, losses or other consequences suffered or incurred in connection with the use of the data, information or opinions contained herein. In addition, nothing contained herein shall be construed as a recommendation to use any products in conflict with existing patents covering any material or its use.

