

# Ingredient Profile: $\delta$ -Undecalactone, Natural

Use in dairy and fruit flavors

Cyndie Lipka, Sethness Greenleaf



*Ingredient Profile is an occasional feature providing insights into specific flavor compounds. –Editor*

$\delta$ -Undecalactone is perhaps one of the most underutilized lactones. It's not often mentioned in the literature when compared to other lactones and it isn't often seen in compounded flavors. It is, however, a gorgeous, delicious and decadent flavoring compound.  $\delta$ -Undecalactone may not be the first lactone to come to mind when thinking of coconut, yet it is cited as a minor component of coconut meat.<sup>1</sup> It is perhaps more expected to see  $\delta$ -undecalactone in spray dried skim milk.<sup>2</sup> According to *Chemically-defined Flavouring Substances*, one also finds this lactone in butter between 0.1–0.5ppm.<sup>3</sup> A more unusual place to find this lactone is in Wagyu beef that has been aged in the presence of oxygen, contributing to its delicious flavor.<sup>4</sup>

There are patents issued from IFF that list the use of  $\delta$ -undecalactone in conjunction with 2- and 3-cyclotetradecen-1-one to mitigate bitterness in coffee (4,183,965), and bring about musky notes needed for blackberry, peach flavors (4,282,274). IFF continues to list  $\delta$ -undecalactone in flavor blends for foods and tobacco uses.

Potential flavor uses include butter, especially heated and clarified; milk; cream; ice cream; yogurt; cheese (in particular cheddar); beef; and fruits that have lactones present such as peach, apricot, mango, nectarine, blackberry and coconut.

Synonyms: 6-Hexyl tetrahydro-2H-pyran-2-one and 5-hydroxyundecanoic acid lactone

FEMA# 3294

CAS# 710-04-3

Molecular formula:  $C_{11}H_{20}O_2$

## References

1. FM Lin and WF Wilkins, Volatile Flavor Components of Coconut Meat. *J Food Sci*, **35**(5), 538–539 (1970).
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3. *Chemically-defined Flavouring Substances*. Council of Europe Publishing, Strasbourg (2000).
4. A Watanabe, M Imanari, M Higuchi, N Shiba and M Yonai, Effects of  $\alpha$ -Tocopherol on Lactones in Beef Headspace during Storage. *J Food Sci*, **75**(9), C774–C778 (2010).

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