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CFA/55/10
21 May 2010

To: Produce WG
Ccfi: Technical Committee, Executive Committee

PRODUCE DECONTAMINATION ASSESSMENT PROTOCOL: PART 2 – WASHING VALIDATION

CFA has been working for some months with IFR on two papers regarding produce decontamination, intended for publication in a peer-reviewed journal, setting out

1. how to attach bacteria to plant surfaces (CFA/54/10)
2. how to validate decontamination effects of washing

The overall aim is to introduce consistency into experimental approaches.

The second paper is enclosed, which has is concurrently being circulated to IFR. The paper sets out a produce washwater decontamination validation protocol.

The protocol is designed to be a minimum requirement for the assessment of washwater decontamination efficacy to be used with current washing approaches, ranges of produce and forms of presentation of produce enabling baseline comparison of the effect on washwater decontamination by using various sanitisers.

It is split into two parts:

a) Validating Sanitiser Biocidal Activity
b) Factory Trials to validate Washwater Sanitisers

The Produce WG agreed at its meeting last week that both this and the current draft of the first paper on the attachment of bacteria (CFA/54/10) should be shared with Campden, Holchem and Steritrox to start to introduce common experimental approaches supported by CFA.

A third paper, which sets out a standard protocol designed to introduce consistency into produce washing e.g. hypochlorite dosing and pH control, has been also been developed (CFA/56/10) and is also being shared with third parties with the aim of increasing take-up beyond the membership.

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Secretary General

PRODUCE WASHING DECONTAMINATION EFFICACY VALIDATION PROTOCOL

INTRODUCTION

This protocol is designed to be a minimum requirement for the assessment of washwater decontamination efficacy to be used with current washing approaches, ranges of produce and forms of presentation of produce enabling baseline comparison of the effect on washwater decontamination by using various sanitisers.

Ideally a produce washwater sanitiser efficacy protocol needs to accommodate

- the various levels of contamination naturally arising between heads
- between different leaves in heads
- seasonal effects
- varietal effects (open/closed heads, waxy cuticles, leaf morphology)
- different preparation methods and therefore different risks regarding the potential for cross contamination
- differing washing methods (pre-preparation, aeration, agitation, temperature, time, post wash)
- the supply chain (time and temperature)

VALIDATING SANITISER BIOCIDAL ACTIVITY

A three stage approach to validation of a sanitiser's biocidal activity is required:

I. Proven biocidal activity using the BS EN 1276:1997 Suspension Test. Compliance with this test demonstrates the fundamental ability of the sanitisers to control appropriate pathogenic organisms.

However, the Standard stipulates that this was carried out at 20ºC for 5 mins, which is of questionable relevance to practical produce washing conditions.

The Suspension Test should therefore also be carried out at 2ºC over 30 seconds to reflect actual temperatures and potentially the shortest contact times in practice.

II. Outcome of this biocidal activity test carried out in the presence of produce under the same temperature and contact time conditions.

In line with EFSA (2010) the following information should be gathered:

- The counts of non-pathogenic microorganisms, e.g. indicator organisms such as *Enterboacteriaceae* and TVC, should be determined pre- and post-use of the decontaminating procedure

- The company making any claims regarding efficacy must carry out tests using inoculated microorganisms, taking into account strain diversity. The efficacy on naturally contaminated food must also be determined.

Inoculation must be in accordance with the attachment protocol (CFA/54/10).

III. Outcome of factory trials under 'real' conditions.

FACTORY TRIALS – VALIDATING WASHWATER SANITISERS

A sanitiser should be assessed using:

a) Produce representative of that usually washed on the line in question. Different produce will react differently to a standard wash process, e.g.

- baby leaf, herbs
- wholehead, e.g. lettuce
- peeled root vegetables, e.g. onions, carrots
- tree fruit
- fruit grown in contact with the soil
- waxy skinned produce, e.g. tomatoes, peppers
- other vegetables, e.g. cabbage, broccoli

b) A number of trials to attempt to address seasonality if this presents particular challenges to the washing process, e.g. country of origin, weather, storage.

c) Flow rates, volumes, temperatures, dwell times etc should be documented for all trials, with comparable parameters being used for trials as in standard washing.

d) Sampling at the beginning (i.e. immediately prior to the wash tank), middle and end of the washing run (i.e. 3 replicate samples)

e) A control sample of produce from the same batch (i.e. same drilling time and field treatment) would need to be assessed both before and after washing using

- whatever was the standard practice on the site e.g. hypochlorite, ClO_2
- water as a control when assessing a sanitiser as opposed to a process

Wash water and product samples should be taken and tested for indicator organisms, i.e. Enterobacteriaceae.

When taking a water sample the sanitiser if necessary must be neutralised, e.g. chlorine must be neutralised with sodium thiosulphate.

Additional testing could also be carried out for generic *E. coli* and *Listeria* spp but cannot solely be used for validation.

Reputable laboratories accredited to a national or international standard and having expertise in testing for and finding organisms of concern in produce or water (as applicable) must be used for analytical work. Laboratories should be accredited for the use of methods for the materials being tested.

f) Conduct factory trials over at least 4 batches, taking 3 replicate samples as above (e).

g) If results from the 4 batches are not comparable review the washing process.

Reference

EFSA (2010) Revision of the Joint AFC/BIOHAZ Guidance document on the submission of data for the evaluation of the safety and efficacy of substances for the removal of microbial surface contamination of foods of animal origin intended for human consumption, The EFSA Journal, 8(4), 1544.