Application of an impedimetric technique for the detection of lytic infection of *Salmonella* spp. by specific phages

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The observation of phage plaques during evaluation of the bacteriophage lytic infection cycle by the spot test method on agar plates, takes 24 to 48 hours and involves many manipulations. An impedance monitoring instrument that could provide possibilities to reduce labour, time and material was evaluated as an alternative to this traditional microbiological assay. The procedure utilises the ability of the instrument to detect bacterial growth in samples by measurement of conductivity changes in liquid culture media.

The aim of this study was not only to adapt the impedimetric method to detect the lytic infection by *Salmonella*-specific bacteriophages, but also to provide a higher selectivity to this rapid method in detecting *Salmonella* spp. by using specific agents. This short elapsed time method has already been described as a way of detecting phages present in lactic starter cultures by evaluation of the detection time parameter and the percentage of the conductance change1,2. Three bacteriophages and twelve strains of *Salmonella* spp. were tested. Each of the isolates was used to inoculate TSB together with each one of the mentioned phages. The inoculation concentration was between 10⁶ and 10⁷ cfu/ml, at a cell: phage ratio of 1:100. From the sample analyses, based on capacitance measurements at 37°C, the infection could be detected, by observation of both detection time delay and distinct curve trends.


Microassay adaptation of the DNS method to evaluate naringinase activity

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Naringin and naringenin are two flavonones that exhibit interesting health activities. Both flavonoids are reported to be anti-oxidant, anti-ulcer, anti-mutagenic, anti-inflammatory and antiproliferative, inhibiting breast cancer. Naringenin can also act as chemopreventive agent against neurodegenerative diseases such as Alzheimer’s disease. Naringinase, an α-L-rhamnopyranosidase that provides the activities of the enzymes α-L-rhamnosidase and β-D-glucosidase, has been used to hydrolyse naringin, a bitter flavonone glycoside, into prunin and this one to the aglycone, naringenin. The sugars released are: rhamnose and glucose which are reducing sugars. This enzymatic synthesis has been studied under different experimental conditions, such as: temperature, pressure, pH, co-solvents as well as substrate and enzyme concentrations1. The dinitrosalicylic acid (DNS) procedure is a commonly used method to estimate reducing sugars concentration. In the enzymatic hydrolysis of polysaccharides, reducing sugars are released, so the enzyme activity may be calculated from the reducing sugars produced. The DNS macroassay was turned into a fully advantages microassay, by using microtiter plates. The main advantages found were: increased repeatability, quickness and large sample numbers. Additionally, smaller amounts of samples and reagents can be used2–3. A good correlation between both macro and micro methods was obtained.