P51

In vitro comparison of lactic acid consumption be dairy Propionibacterium

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Background – Acidosis is a common disorder of cattle caused by the rapid fermentation of high grain diets and the subsequent production of lactic acid within the rumen. Conversion of the lactic acid to propionic acid by indigenous rumen Propionibacterium has been reported to improve rumen pH as well as provide a useful energy source for the cattle.
Objective – To investigate the ability of selected strains of dairy Propionibacterium to convert lactic acid to propionic acid in both a nutrient base media and in rumen fluid.
Design – Six strains of dairy Propionibacterium were inoculated into Sodium Lactate broth or rumen fluid adjusted to a pH 4 and 5 using lactic acid. Growth rate of inoculants were measured using a spectrometer and pH change. Changes in organic acid (lactic acid, propionic acid acetic acid) composition in the supernatant were determined by HPLC.
Outcomes – Different strains dairy Propionibacterium were demonstrated to have different growth rates under high lactic acid environments. Some strains were able to efficiently convert lactic acid into propionic acid.
Conclusion – The ability of some strains of dairy propionibacterium to convert lactic acid to propionic acid suggests a potential application of probiotic propionibacterium in prevention of acidosis in cattle.

P52

Contribution of fish/seafood, beef, lamb, pork and poultry to population intakes of long chain omega-3 polyunsaturated fatty acids

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Background – Omega-3 polyunsaturated fatty acids (n-3 PUFA), especially the long chain (LC) n-3 PUFA, have been accorded numerous health benefits. Fish is the primary food source of LC n-3 PUFA in Australian diets, followed closely by meat.
Objective – The aim of this study was to ascertain the contribution of different types of fish and seafood, meat and poultry to LC n-3 PUFA intakes in the Australian diet.
Design – The relative contributions of fish/seafood, beef, lamb, pork and poultry were assessed from the 24 hour diet recall data of 13,858 people in the 1995 Australian National Nutrition Survey (NNS95).
Outcomes – The results show that 80% of adults consumed less than 20g seafood per day and 55% consumed none at all. However, almost half consumed more than 70g of red meat (beef or lamb) per day whilst 40-45% of people did not consume pork or poultry. Fish/seafood, beef, poultry, lamb and pork contributes 46.7%, 22.4%, 10.4%, 5.9%, 4.0% respectively. For fish/seafood the contribution to LC n-3 PUFA intakes was canned fish (16.7%), fresh lean fish (7.7%, mainly fried), fish meals (7.5%), other seafood (4.5%), fresh oily fish (4.3%) and processed fish (1.5%, eg. fish patties). Beef, poultry, lamb were consumed primarily as a meat cuts (14%, 7.3%, 5.2% respectively), followed by a stew/curry (5.9%, 1.4%, 0.6% respectively). Pork was consumed primarily as meat cut (3.0%) followed by stir fry (0.3%). Poultry was consumed untrimmed (i.e. with the skin), whilst other cuts of meat were consumed trimmed.
Conclusion – Despite the low intake of fish/seafood, it is still the major contributor to LC n-3 PUFA intakes with the main contributions being canned and fried fish. Various meat cuts also make a major contribution to LC n-3 PUFA intakes due to high consumption of meat by Australians.