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Abstract

Plant secondary metabolites are a natural resource that is largely unexploited in ‘conventional’ animal production systems. They have in the past been generally considered as a source of anti-nutritional factors, and not as a source of exploitable performance-enhancing compounds. Recent and continuing changes to legislation controlling the use of animal feed additives have stimulated interest in bioactive secondary metabolites as alternative performance enhancers. They are broadly compatible with current thinking on the future of agriculture and food in Europe, and with consumer opinion. Interest has been largely on their manipulative role in the digestive and absorptive processes of the hindgut. The present paper will review the use of plants and their extracts to manipulate the rumen microbial ecosystem to improve the efficiency of rumen metabolism. The bioavailability of secondary metabolites and their actions on peripheral metabolism will be considered with a view to improving animal performance. The challenge of delivering plants and their extracts to animals outdoors in a controlled manner will be discussed. Much of what is known about the beneficial roles of plant secondary metabolites on animal performance is circumstantial and is based on tenuous data. In order to more fully exploit their bioactive properties for the benefit of animal performance, modes of action need to be understood. Uptake will be dependent on proven efficacy and consumer acceptance of assurances relating to safety, welfare and the environment.

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