David RK Harding et.al., Med Chem (Los Angeles) 2018, Volume 8
DOI: 10.4172/2161-0444-C3-046

Condensed tannin from bioactive plants: A potential solution for killing nematodes as a novel anthelmintic to tackle anthelmintic resistance problems in New Zealand

David RK Harding[1], Arka Gupta[1], Preet Singh[1], Catherine Whitby[1], Bill Pomroy[1] and Nadia Kandile[2]
[1]Massey University, New Zealand
[2]Ain Shams University, Egypt

Being the largest lamb meat exporter in the world, the sheep industry is one of the important economic sectors in New Zealand (NZ) with over NZ8$ billion in export earnings. Gastrointestinal Nematode (GIN) infections represent a major threat to the health, welfare and productivity of sheep and cattle populations in NZ. Infected lambs will have a compromised protein metabolism with small infections resulting in weight reduction but this increase to severe clinical disease with heavier infections and potentially mortality. Internal parasites cost the sheep industry in excess of NZ$300M annually in lost production and drench use. The excessive use of anthelmintics to cure GIN infections has led to a widespread problem with anthelmintic resistance by parasites. Anthelmintic resistance costs an estimated additional NZ$20M per year and this is predicted to rise to NZ$60M per year by 2022. There is an urgent need to introduce a new anthelmintic to the market which should not cause resistance to GIN infected sheep and be efficient for killing nematodes. One of the current studies involves the use of bioactive plant extracts containing Condensed Tannins (CT). These have been shown to have some effect in reducing GIN burdens in infected sheep.

Biography

David Harding (PhD) is a Professor of Chemistry at Massey University, Palmerston North, New Zealand. His BSc Honours project study (University of Canterbury, New Zealand) was published and involved triazine derivatives as potential herbicides and/or insecticides. This set a life-long ambition to apply chemistry to bio-applications. He worked for Eli Lilly and Company (UK labs). His activities also involved Elanco. The compounds made were screened widely for bio-application. After gaining a PhD from the University of Western Ontario, London, Ontario, Canada, he returned to NZ. His synthesis and/or bioactivity studies have involved peptide synthesis, purification of bio-actives from various bodily fluids and analysis of the components. He developed the Sulfo-Cope rearrangement and the HCIC (hydrophobic charge induction) technique for purifying genetically engineered chymosin from milk for the then Genencor. He also was involved in the purification of HGH (human growth hormone) and HSA (human serum albumin) for Genentech Inc. His current drug delivery activities include relief of pain in the temporomandibular joints as well as transdermal pain relief. His oral drug delivery programme has expanded to address the problem of gastric nematodes in ruminants.

D.R.Harding@massey.ac.nz

Notes: