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### Medicinal applications of fulvic acid

Humic and fulvic acid are natural products derived from the humification process of plant materials. A state owned company, tasked to find medicinal applications for bituminous coal, found a way to produce humic and fulvic acid from coal. We were requested to test these products for applications in the medical field and we found both these products are effective as antiinflammatory products. Fulvic acid also possesses broad spectrum antimicrobial activity *in vitro* and is effective in the eradication of bacteria including those resistant to antibiotics. Because of the expensive process of converting bituminous coal to humic and fulvic acid, a pharmaceutical company developed a safe and effective potassium humate product from brown coal and a second company developed a process to convert a carbohydrate source to fulvic acid, called carbohydrate derived fulvic acid.

In preclinical studies we found that the fulvic acid product suppresses the cutaneous immune response in mice whereas, in a phase 1 study done by a PhD student of mine (JJ Gandy), we found the product to be safe at a dosage of 40ml of a 3.8% solution taken twice daily for 3 days. In this clinical study a preliminary skin prick test was also done on the participants. The allergen to which the participants were most allergic, together with histamine and a negative control, were applied at the start and end of the study. A decrease in the wheel and flare reactions was observed in the treatment group. In conclusion we found that the product is safe and effective as an antiinflammatory agent at oral dosages of up to 40ml taken twice daily for one week.

To evaluate the efficacy and safety of the product as a atopic treatment for eczema, patients were randomly selected to receive fulvic acid or placebo (emolient therapy). A significant improvement in the symptoms was observed in the group treated with the product. In conclusion, the product was well tolerated and effective as a topical treatment for eczema.

### Biography

Connie Medlen completed her pre and postgraduate studies in the Faculty of Medicine at the University of Pretoria, South Africa. She worked in the Departments of Immunology and Pharmacology at the University for 35 years before her retirement in 2009. In 2014 she was appointed as research Mentor for the Faculty. She has published 132 papers in international journals, presented at 45 international congresses and is the inventor/co-inventor of 6 patents. She publishes under the name of CEJ van Rensburg.

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