

## A simple thin layer chromatographic method to differentiate neuro-toxic Vetch *Vicia sativa* from red lentils *Lens culinaris*

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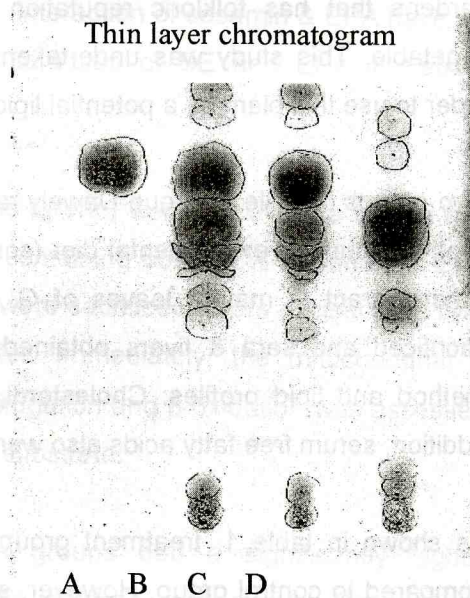
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Vetch *Vicia sativa* is a pulse grown in Australia as a ruminant feed. Edible cotyledons morphologically resemble that of red lentils *Lens culinaris* which is a staple human food in many parts of the world. As such, nefarious trading of this pulse taking place in many countries, as lentils, ignoring the possible health hazard due to the presence of neuro-toxic dipeptide  $\gamma$ -glutamyl- $\beta$ -cyanoalanine in the pulse. Due to the morphological resemblance of the pulse to that of lentils, it is difficult to differentiate visually or by physical methods. Therefore, a simple thin layer chromatographic technique was developed to differentiate Vetch *Vicia sativa* from red lentil *Lens culinaris* using neuro-toxic dipeptide  $\gamma$ -glutamyl- $\beta$ -cyanoalanine as a marker molecule. Using this method, a consignment of vetch imported to Sri Lanka was identified and with this scientific evidence, releasing of the consignment to the market was legally prevented.

A= $\gamma$ -glutamyl- $\beta$ -cyanoalanine, B=Authentic Vetch, C=Suspected sample, D= Authentic Lentil

One gram (1 g) each from authentic vetch, lentils and sample from the consignment were powdered and separately extracted into 30% EtOH/water for 2 h under shaking. The extracts were allowed to settle and a TLC chromatogram was developed with pure standard of dipeptide  $\gamma$ -glutamyl  $\beta$ -cyanoalanin : Plate : Pre-coated Silica GF254 (20x10 cm), solvent system : n-Propanol : Water / 70 : 30. After development to the maximum length (17 cm) plate was visualized by spraying Ninhydrin in ethanol/acetic acid 98/2 (v/v) followed by heating at 100 °C for about 3min. As shown TLC fingerprint analysis can clearly differentiate toxic Vetch from red lentils.

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