

The riddle of lathyrism

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"What has one voice, and is four-footed, two-footed and three-footed?"⁽¹⁾ A human being. This riddle of the sphinx was solved. The development of human lathyrism is characterised by three stages: limping (two-footed), walking with a stick (three-footed) and crawling (four-footed). The Greeks have used *Lathyrus sativus* (grasspea), *L. clymenum* and *L. ochrus* (greek: fava) as food since antiquity. This is yet another riddle.

Lathyrism remains an unsolved problem because we do not understand its mechanism. It has so far been impossible to provoke the human lathyrism syndrome in an experimental model.

No reliable advice can therefore be given regarding the tolerable safe levels of grasspea consumption for humans and other monogastric animals. A sensitive bioassay for lathyrism is needed.

The low ODAP *L. sativus* and *L. cicera* varieties should be tested under the most extreme nutritional conditions. They have to be safe for starving people, who are going to continue to rely, particularly, on the grasspea for survival. It is also important to assess the toxicity of *Vicia sativa* cv. Blanchefleur in this context.

Neurolathyrism is intricately linked to drought caused famine, poverty and malnutrition. Malnutrition is also an important factor associated with other neurodegenerative afflictions such as Konzo (neuro-

cassavaism) and optic neuropathy.

Surprisingly, the role(s) of nutrient deficiencies have never been seriously studied as pre-dispositional factors for these debilitating diseases.

It is well known that grain legumes contain low levels of sulphur amino acids, while anti-nutritional factors such as trypsin inhibitors (destroyed by sufficient moist heating) deplete these vital nutrients even further. To improve the nutritive balance, methionine, minerals and vitamins are added as supplements to commercial and experimental diets containing legumes.

Has the use of well balanced experimental diets prevented the development of lathyrism in previous feeding studies with grasspea? Does a balanced diet prevent lathyrism?

A study is needed to dissect which nutrients (energy, lipids, amino acids, vitamins, macro and micro elements) afford protection against lathyrism and to learn under which conditions lathyrism is provoked.

Malnutrition has so far been ignored in experimental studies of neurodegenerative diseases. Now is the time to explore its significance and to take the next leap towards solving the riddle of lathyrism.

For further information:

Pubmed and associated databases

<http://www.ncbi.nlm.nih.gov:80/entrez/>

Enneking, D. (1998) A bibliographic database for the genus *Lathyrus*. CLIMA Occasional publication No 18 ISSN 1-320-366; ISBN 0-86422-829-5. Public version (no commercial content) <http://mansfeld.ipk-gatersleben.de/ris/risweb.isa>

References

1. <http://www.users.globalnet.co.uk/~loxias/sphinx.htm>