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Tissue specific expression and *in-silico* characterization of a putative *Cysteine synthase* gene from *Lathyrus sativus* L.

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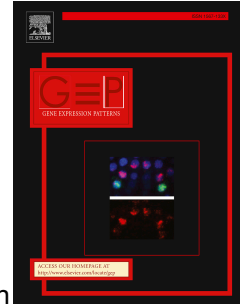
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1 **Tissue specific expression and in-silico characterization of a putative *Cysteine***
2 ***synthase* gene from *Lathyrus sativus* L.**

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11 **Abstract (285 words)**

12 Grass pea (*Lathyrus sativus* L.) is a worldwide popular pulse crop especially for its
13 protein rich seeds with least production cost. However, the use of the crop became
14 controversial due to the presence of non-protein amino acid, β -N-oxalyl-L- α , β -
15 diaminopropionic acid (β -ODAP) in its seed and leaf, which is known as the principle
16 neurotoxin to cause neurolathyrism (a motor neurodegenerative disease of humans
17 and animals) during prolonged consumption as regular diet. Till date, the knowledge
18 on β -ODAP biosynthesis in *Lathyrus* sp. is limited only to a small part of the complex
19 bio-chemical steps involved including a few known sulfur-containing enzymes (viz.
20 *cysteine synthase*, *ODAP synthase* etc.). In *Lathyrus sativus*, biosynthesis of β -ODAP
21 varies differentially in a tissue-specific manner as well as in response to several
22 environmental stresses viz. zinc deficiency, iron over-exposure, moisture stress etc. In
23 the present study, a novel *cysteine synthase* gene (*LsCSase*) from *Lathyrus sativus* L
24 was identified and characterized through bioinformatics approaches. The
25 bioinformatic analysis revealed that *LsCSase* showed maximum similarity with the O-

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