

*Antinutritional factors*

*Possible palliatives*

*References*

Soya	Protease inhibitors, lectins, antigenic proteins, alkaloids	Heat treatment	van Kempen and Jansman (1994) Huisman and Tolman (1992)
Peas	Protease inhibitors, lectins, pectins, phenolics, tannins, haemagglutinins	Micronisation	Igbasan and Guenter (1996) Igbasan and Guenter (1997) Huisman and Tolman (1992) Castell <i>et al.</i> , (1996)
Lupins	Alkaloids, raffinose oligosaccharides, pectins, $\alpha$ -galactosides	Sweet lupin spp.	Olver and Jonker (1997) van Kempen and Jansman (1994) Huisman and Tolman (1992)
Beans	Tannins, trypsin inhibitors, lectins, phenolics, vicine/convicine	Heat treatment	Castanon and Perez-Lanzac (1990) Huisman and Tolman (1992)
Sunflower	Trypsin inhibitors, phenolics, phytates, chlorogenic acid, quinic acid		Huisman and Tolman (1992) van Kempen and Jansman (1994)
Rapeseed	Glucosinolates, phenolics, tannins, phytic acid, pectins, sinapines, erucic acid	Low glucosinolate varieties	Khattak <i>et al.</i> , (1996) van Kempen and Jansman (1994) Huisman and Tolman (1992) McDonald <i>et al.</i> , (1995)
Linseed	Vitamin B <sub>6</sub> antagonist, trypsin inhibitor, cyanogenic glucoside		van Kempen and Jansman (1994)

**Table 5. SOME PUBLISHED SUGGESTED MAXIMUM INCLUSION RATES OF VARIOUS VEGETABLE PROTEIN SOURCES (g/kg)**

	<i>Broiler feeds</i>	<i>Layers feeds</i>	<i>References</i>
Peas	250-300	150-200, 300 for better egg taste	UNIP-ITCF (1995)
	To 4 weeks 50, after 4 weeks 100	100	Leeson and Summers (1997)
		100	Larbier and Leclercq (1992)
		300	Castanon and Perez-Lanzac (1990)
Lupins	50	200	Igbasan and Guenter (1997b)
	To 4 weeks 80, after 4 weeks 100	100	McDonald <i>et al.</i> , (1995)
		150	Leeson and Summers (1997)
Beans	300	200	Castanon and Perez-Lanzac (1990)
		100	Larbier and Leclercq (1992)
Sunflower	To 4 weeks 80, after 4 weeks 100	100	Jansman <i>et al.</i> , (1993)
		150	McDonald <i>et al.</i> , (1995)
Rapeseed	50		Leeson and Summers (1997)
	100 (double 00 varieties)	100 (double 00 varieties; white layers only)	McDonald <i>et al.</i> , (1995)
	Starter 50, finisher 80		van Kempen and Jansman (1994)
			Leeson and Summers (1997)

**Table 3. EXAMPLE VITAMIN CONTENTS OF FULL FAT SOYA, WHEAT AND PEAS, FOR COMPARISON**

	<i>Full fat soya</i>	<i>Wheat</i>	<i>Peas</i>
Vitamin E (mg/kg)	40	13	1
Pantothenic acid (mg/kg)	10	12	11
Niacin (mg/kg)	15	55	37
Choline equivalent (mg/kg)	2174	2200	668
Riboflavin (B <sub>2</sub> ) (mg/kg)	2.4	1.1	2.2
Thiamin (B <sub>1</sub> ) (mg/kg)	1.8	4.8	7.4
Biotin (mg/kg)	0.31	0.11	0.16
Folic acid (mg/kg)	0.53	0.40	0.30
Vitamin A activity (10 <sup>3</sup> IU/kg)	3.2		

(Based on Leeson and Summers, 1997)