

**Table (3): Effect of dietary vegetable oils and some feed additives and their interaction between them on the nutrients utilization.**

Dietary treatment		Mean±SE									
Vegetable oil sources	Feed additives	DM(%)	OM(%)	CP(%)	EE(%)	CF(%)	NFE	Ca retained (g/hen/d)	Ca balance (%)	Avai. P	P balance (%)
without oil corn oil sunflower oil		82.04±0.50 <sup>NS</sup>	84.28±0.79 <sup>a</sup>	82.71±0.58 <sup>NS</sup>	86.17±0.56 <sup>NS</sup>	25.36±0.57 <sup>a</sup>	88.73±0.62 <sup>NS</sup>	2.37±0.09 <sup>NS</sup>	85.77±1.35 <sup>NS</sup>	0.410.03 <sup>NS</sup>	63.08±1.12c
		82.59±0.56	83.92±0.57 <sup>ab</sup>	84.33±0.47	88.02±0.61	24.33±0.48 <sup>ab</sup>	87.55±0.59	2.24±0.13	84.18±2.70	0.45±0.02	68.69±2.11 <sup>a</sup>
		83.40±0.76	82.40±0.55 <sup>b</sup>	83.55±0.51	85.75±0.89	23.11±0.52 <sup>b</sup>	87.06±0.59	2.28±0.05	84.75±1.66	0.44±0.01	66.78±1.09 <sup>b</sup>
	Control	79.86±0.66 <sup>b</sup>	80.49±0.60c	81.19±0.66 <sup>b</sup>	86.02±0.61 <sup>NS</sup>	22.99±0.54 <sup>b</sup>	85.15±0.54c	2.08±0.12 <sup>b</sup>	77.60±2.41c	0.41±0.01 <sup>NS</sup>	62.71±1.44c
	Vit. C	83.88±0.82 <sup>a</sup>	83.13±0.57 <sup>b</sup>	83.67±0.54 <sup>a</sup>	87.61±0.65	24.39±0.63	86.68±0.63 <sup>b</sup> c	2.29±0.21 <sup>a</sup>	83.93±1.37 <sup>b</sup>	0.45±0.01	69.33±1.91 <sup>a</sup>
	kemzyme	83.55±0.60 <sup>a</sup>	84.76±0.60 <sup>ab</sup>	84.24±0.60 <sup>a</sup>	84.81±1.19	25.06±0.56 <sup>ab</sup>	88.59±0.54 <sup>ab</sup>	2.36±0.08 <sup>a</sup>	86.55±0.60 <sup>ab</sup>	0.43±0.01	65.91±0.66
	Vit. C +kem.	83.42±0.57 <sup>a</sup>	85.74±0.88 <sup>a</sup>	85.02±0.52 <sup>a</sup>	88.12±0.71	25.57±0.62 <sup>a</sup>	90.09±0.58 <sup>a</sup>	2.40±0.11 <sup>a</sup>	91.52±1.92 <sup>a</sup>	0.44±0.05	66.78±1.18 <sup>ab</sup>
without oil	Control	79.59±0.94 <sup>NS</sup>	80.19±1.25 <sup>NS</sup>	79.86±1.25 <sup>NS</sup>	85.08±0.94 <sup>NS</sup>	23.02±0.93 <sup>NS</sup>	86.01±0.94 <sup>NS</sup>	2.18±0.26 <sup>NS</sup>	81.12±3.15 <sup>NS</sup>	0.39±0.01 <sup>NS</sup>	59.17±1.08 <sup>NS</sup>
	Vit. C	82.11±0.94	83.21±0.94	82.48±0.93	86.87±1.25	25.11±1.25	87.57±1.23	2.36±0.12	86.03±2.50	0.43±0.06	65.76±1.08
	Kemzyme	83.42±0.94	86.11±1.22	83.86±1.25	86.13±0.92	26.54±0.92	89.78±0.93	2.40±0.07	87.85±1.81	0.41±0.03	63.16±1.11
	Vit. C +kem.	83.02±0.94	87.61±0.93	84.64±0.74	86.60±1.39	26.78±1.22	91.56±0.75	2.56±0.26	88.11±2.31	0.42±0.03	64.23±0.99
Corn oil	Control	80.18±1.28	81.46±93.95±	82.14±0.93	86.83±1.27	22.55±0.92	84.98±0.93	2.05±0.26	77.22±1.84	0.43±0.08	65.24±0.62
	Vit. C	82.69±0.94	1.22	84.56±0.94	88.35±1.20	24.62±0.93	86.48±0.94	2.24±0.26	82.65±0.96	0.47±0.02	71.88±1.25
	kemzyme	83.74±1.25	84.51±0.94	84.87±0.83	87.81±1.20	24.98±0.96	88.10±0.94	2.28±0.26	84.46±0.90	0.44±0.06	67.29±1.90
	Vit. C +kem.	83.78±0.91	85.61±1.28	85.77±0.56	89.11±1.20	25.95±0.96	80.65±0.74	2.37±0.26	92.34±1.16	0.46±0.04	70.35±1.18
sunflower oil	Control	79.81±1.20	79.65±0.94	81.56±1.23	86.17±0.93	21.31±0.94	84.48±0.93	2.02±0.11	74.42±1.60	0.42±0.07	63.72±1.36
	Vit. C	86.83±2.60	82.25±0.78	83.99±0.93	87.67±0.94	23.44±1.09	86.01±1.10	2.28±0.11	83.11±2.07	0.46±0.04	70.35±0.85
	kemzyme	83.51±0.94	83.67±0.93	84.01±0.94	80.51±2.86	23.68±0.93	87.89±0.93	2.42±0.04	87.35±1.12	0.44±0.02	67.30±0.78
	Vit. C +kem.	83.45±0.93	84.01±1.31	84.67±0.93	88.66±1.04	23.99±1.10	89.87±1.09	2.39±0.10	94.13±1.62	0.43±0.06	65.76±2.11

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Vegetable oil sources	Feed additives	DM (%)	OM (%)	CP (%)	EE (%)	CF (%)	NFE	Ca retained (g/hen/d)	Ca balance (%)	Avai. P	P balance (%)
Without oil		82.04± 0.50 <sup>NS</sup>	84.28± 0.79 <sup>a</sup>	82.71± 0.58 <sup>NS</sup>	86.17± 0.56 <sup>NS</sup>	25.36± 0.57 <sup>a</sup>	88.73± 0.62 <sup>NS</sup>	2.37± 0.09 <sup>NS</sup>	85.77± 1.35 <sup>NS</sup>	0.41± 0.03 <sup>NS</sup>	63.08± 1.12 <sup>c</sup>
	Corn oil	82.59± 0.56	83.92± 0.57 <sup>ab</sup>	84.33± 0.47	88.02± 0.61	24.33± 0.48 <sup>ab</sup>	87.55± 0.59	2.24± 0.13	84.18± 2.70	0.45± 0.02	68.69± 2.11 <sup>a</sup>
Sunflower oil		83.40± 0.76	82.40± 0.55 <sup>b</sup>	83.55± 0.51	85.75± 0.89	23.11± 0.52 <sup>b</sup>	87.06± 0.59	2.28± 0.05	84.75± 1.66	0.44± 0.01	66.78± 1.09 <sup>b</sup>
	Control	79.86± 0.66 <sup>b</sup>	80.49± 0.60 <sup>c</sup>	81.19± 0.66 <sup>b</sup>	86.02± 0.61 <sup>NS</sup>	22.99± 0.54 <sup>b</sup>	85.15± 0.54 <sup>c</sup>	2.08± 0.12 <sup>b</sup>	77.60± 2.41 <sup>c</sup>	0.41± 0.01 <sup>NS</sup>	62.71± 1.44 <sup>c</sup>
	Vit. C	83.88± 0.82 <sup>a</sup>	83.13± 0.57 <sup>b</sup>	83.67± 0.54 <sup>a</sup>	87.61± 0.65	24.39± 0.63	86.68± 0.63 <sup>b</sup> <sub>c</sub>	2.29± 0.21 <sup>a</sup>	83.93± 1.37 <sup>b</sup>	0.45± 0.01	69.33± 1.91 <sup>a</sup>
	Kemzyme	83.55± 0.60 <sup>a</sup>	84.76± 0.60 <sup>ab</sup>	84.24± 0.60 <sup>a</sup>	84.81± 1.19	25.06± 0.56 <sup>ab</sup>	88.59± 0.54 <sup>ab</sup>	2.36± 0.08 <sup>a</sup>	86.55± 0.60 <sup>ab</sup>	0.43± 0.01	65.91± 0.66
	Vit. C +kem.	83.42± 0.57 <sup>a</sup>	85.74± 0.88 <sup>a</sup>	85.02± 0.52 <sup>a</sup>	88.12± 0.71	25.57± 0.62 <sup>a</sup>	90.09± 0.58 <sup>a</sup>	2.40± 0.11 <sup>a</sup>	91.52± 1.92 <sup>a</sup>	0.44± 0.05	66.78± 1.18 <sup>ab</sup>
Without oil	Control	79.59± 0.94 <sup>NS</sup>	80.19± 1.25 <sup>NS</sup>	79.86± 1.25 <sup>NS</sup>	85.08± 0.94 <sup>NS</sup>	23.02± 0.93 <sup>NS</sup>	86.01± 0.94 <sup>NS</sup>	2.18± 0.26 <sup>NS</sup>	81.12± 3.15 <sup>NS</sup>	0.39± 0.01 <sup>NS</sup>	59.17± 1.08 <sup>NS</sup>
	Vit. C	82.11± 0.94	83.21± 0.94	82.48± 0.93	86.87± 1.25	25.11± 1.25	87.57± 1.23	2.36± 0.12	86.03± 2.50	0.43± 0.06	65.76± 1.08
	Kemzyme	83.42± 0.94	86.11± 1.22	83.86± 1.25	86.13± 0.92	26.54± 0.92	89.78± 0.93	2.40± 0.07	87.85± 1.81	0.41± 0.03	63.16± 1.11
	Vit. C +kem.	83.02± 0.94	87.61± 0.93	84.64± 0.74	86.60± 1.39	26.78± 1.22	91.56± 0.75	2.56± 0.26	88.11± 2.31	0.42± 0.03	64.23± 0.99
Corn oil	Control	80.18± 1.28	81.46± 0.	82.14± 0.93	86.83± 1.27	22.55± 0.92	84.98± 0.93	2.05± 0.26	77.22± 1.84	0.43± 0.08	65.24± 0.62
	Vit. C	82.69± 0.94	93.95± 1.22	84.56± 0.94	88.35± 1.20	24.62± 0.93	86.48± 0.94	2.24± 0.26	82.65± 0.96	0.47± 0.02	71.88± 1.25
	Kemzyme	83.74± 1.25	84.51± 0.94	84.87± 0.83	87.81± 1.20	24.98± 0.96	88.10± 0.94	2.28± 0.26	84.46± 0.90	0.44± 0.06	67.29± 1.90
	Vit. C +kem.	83.78±0.91	85.61± 1.28	85.77± 0.56	89.11± 1.20	25.95± 0.96	80.65± 0.74	2.37± 0.26	92.34± 1.16	0.46± 0.04	70.35± 1.18
Sunflower oil	Control	79.81± 1.20	79.65± 0.94	81.56± 1.23	86.17± 0.93	21.31± 0.94	84.48± 0.93	2.02± 0.11	74.42± 1.60	0.42± 0.07	63.72± 1.36
	Vit. C	86.83± 2.60	82.25± 0.78	83.99± 0.93	87.67± 0.94	23.44± 1.09	86.01± 1.10	2.28± 0.11	83.11± 2.07	0.46± 0.04	70.35± 0.85
	Kemzyme	83.51± 0.94	83.67± 0.93	84.01± 0.94	80.51± 2.86	23.68± 0.93	87.89± 0.93	2.42± 0.04	87.35± 1.12	0.44± 0.02	67.30± 0.78
	Vit. C +kem.	83.45± 0.93	84.01± 1.31	84.67± 0.93	88.66± 1.04	23.99± 1.10	89.87± 1.09	2.39± 0.10	94.13± 1.62	0.43± 0.06	65.76± 2.11