



## Effects Optimum Vitamin Nutrition (OVN)

Vitamin	Primary function	OVN responses for animals
Fat-soluble vitamins		
A	<ul style="list-style-type: none"> <li>• Vision</li> <li>• Growth and development</li> <li>• Maintenance of skin and epithelium</li> </ul>	Reproduction and immunity, health and welfare
D	<ul style="list-style-type: none"> <li>• Regulation of calcium and phosphate metabolism</li> <li>• Bone formation</li> </ul>	Health, welfare and better food quality for consumers
E	<ul style="list-style-type: none"> <li>• Antioxidant of the body</li> </ul>	Health and welfare and better food quality for consumers
K	<ul style="list-style-type: none"> <li>• Blood coagulation</li> </ul>	Health and welfare
Water-soluble vitamins		
C	<ul style="list-style-type: none"> <li>• Intracellular antioxidant</li> <li>• Collagen biosynthesis i.e. differentiation of connective tissue such as; muscle and cartilage and also bone</li> </ul>	Health and welfare, growth , reproduction, stress reduction
B <sub>1</sub>	<ul style="list-style-type: none"> <li>• Co-enzyme in energy metabolism</li> <li>• Function of neural tissue</li> </ul>	Growth, health and welfare
B <sub>2</sub>	<ul style="list-style-type: none"> <li>• Energy production, co-enzyme in carbohydrate, fat, protein metabolism</li> </ul>	Protein accretion, reproduction, growth, health and welfare
B <sub>6</sub>	<ul style="list-style-type: none"> <li>• Co-enzyme in protein metabolism</li> <li>• Fat and carbohydrate metabolism</li> </ul>	Protein accretion and growth
B <sub>12</sub>	<ul style="list-style-type: none"> <li>• Red blood cell synthesis</li> <li>• Maintenance of nervous system</li> <li>• Metabolism of nucleic acids</li> </ul>	Growth, health and welfare
Niacin (B <sub>3</sub> )	<ul style="list-style-type: none"> <li>• Co-enzyme in metabolism of proteins</li> <li>• Fats and carbohydrates</li> </ul>	Growth, health and welfare
Pantothenic acid (B <sub>5</sub> )	<ul style="list-style-type: none"> <li>• Metabolism of carbohydrates, proteins and fats</li> <li>• Degradation of fats</li> <li>• Normal function of skin and mucosa</li> </ul>	Reproduction, growth, health and welfare
Folic Acid (B <sub>9</sub> )	<ul style="list-style-type: none"> <li>• Production and maintenance of new cells, co-enzyme in aminoacid metabolism, co-enzyme in the synthesis of nucleic acids</li> </ul>	Reproduction, growth, health and welfare
Biotin (B <sub>7</sub> )	<ul style="list-style-type: none"> <li>• Energy metabolism, co-enzyme in carbohydrate, fat and protein metabolism</li> </ul>	Reproduction, growth, health and welfare