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**ASSIGNMENT**

1(a). **Coenzyme** are substances that enhances the action of an enzyme. (An enzyme is a protein that functions as a catalyst to mediate and speed a chemical reaction).

Coenzymes are small molecules. They cannot by themselves catalyze a reaction but they can help enzymes to do so. In technical terms, coenzymes are organic nonprotein molecules that bind with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme).

### 1(b). **Water-soluble vitamins**

A water-soluble vitamin is one that dissolves in water—and as a result, is easily absorbed into the tissues of the body and metabolized more quickly than fat-soluble vitamins.

The majority of vitamins, including the [B vitamin complex](https://ritual.com/articles/ingredient-bios-vitamin-b12) and [Vitamin C](https://ritual.com/articles/am-i-getting-enough-vitamin-c), are water-soluble (1):

* Vitamin B1 (thiamine)
* Vitamin B2 (riboflavin)
* Vitamin B3 (niacin)
* Vitamin B5 (pantothenic acid)
* Vitamin B6
* Vitamin B7 (biotin)
* Vitamin B9 (folate)
* Vitamin B12 (cobalamin)
* Vitamin C

Any excess of water-soluble vitamins, like the Vitamin B complex or Vitamin C, are excreted through the urination process. Many B vitamins and Vitamin C [can be found in vegetables](https://ritual.com/articles/am-i-getting-enough-vitamin-c) (like leafy greens and other green vegetables) and fruits (like citrus fruits).

### **Fat-soluble vitamins**

Fat-soluble vitamins dissolve in—you guessed it—fat. These vitamins are absorbed by fat globules within the body and then carried throughout the bloodstream. There are four fat-soluble vitamins, which include:

* Vitamin A
* [Vitamin D](https://ritual.com/articles/ingredient-bios-vitamin-d3)
* [Vitamin E](https://ritual.com/articles/ingredient-bios-vitamin-e)
* [Vitamin K](https://ritual.com/products/essential-for-women-multivitamin/ingredients/vitamin-k2)

Fat-soluble vitamins are found in high-fat food sources like egg yolks, liver, beef, fatty fish, and dairy products. Unlike water-soluble vitamins, any excess of fat-soluble vitamins don’t immediately leave the body. Instead, they’re stored in the liver or fatty tissue for later use.

1(c). Niacin assists functions of the nervous and digestive system. It plays a role in food metabolism and in the formation of red blood cells and skin. NAD and NADP are coenzymes that are part of the energy production system of the body. This system works by means of oxidation and reduction (redox) reactions.