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Long-Term Interferon Beta-1a Treatment Pharmacologic Biomarkers in REFLEX and REFLEXION

Jerome Antony*
Department of Laboratory Medicine, Sichuan University, China

INTRODUCTION

In analytical chemistry and environmental science, biomarkers are chemicals, metabolites, susceptibility characteristics, or changes in the body that are related to an organism's exposure to a chemical. They can determine whether or not an exposure occurred, the route of exposure, the pathway of exposure and the effects of the exposure. Bio monitoring is another term for the use of biomarkers in exposure studies. When dealing with exposure assessment, three types of biomarkers can be useful: Susceptibility biomarkers, exposure biomarkers, and effect biomarkers. The most commonly used biomarkers of exposure are those that can provide information on the route, pathway, and, in some cases, even the source of exposure. Biomarkers of susceptibility are indicators of an organism's natural characteristics that make it more vulnerable to the effects of chemical exposure.

DESCRIPTION

They can assist in defining which sensitivities are more vulnerable, as well as critical times when exposures can be most harmful. For example, an asthmatic's exhalation strength will indicate how susceptible that person is to the respiratory effects of exposure to brevetoxin, a toxic compound produced during a red tide. Biomarkers of exposure are actual chemicals, or chemical metabolites, that can be measured in the body or after excretion from the body to determine various characteristics of an organism's exposure. A person's or fish's blood, for example, can be tested to determine lead and mercury levels. Biomarkers of effect are quantifiable changes that an individual experiences as a result of exposure to a compound and may indicate a health effect. For example, after being exposed to DDT, an organ chlorine insecticide known to cause reproductive system problems, a woman may experience miscarriages that can be traced back to her previous exposure. The most commonly used biomarkers of exposure are those that can provide information on the route, pathway, and, in some cases, even the source of exposure. These indicators also enable researchers to work backward in time to identify an exposure and prevent it from causing further harm. In contrast to biomarkers of effect, a scientist can work backwards to determine if and what type of exposure occurred, but it may be too late to change anything. Biomarkers of effect, on the other hand, are useful for future studies on the chemical(s) of interest, and the results may aid in stricter laws or guidelines regarding the chemical (s). The ability of biomarkers to predict and quantify exposure and dose must be assessed. Certain characteristics are desirable when linking a biomarker to an exposure. High specificity (one exposure to one biomarker), a linear relationship over time, a strong correlation with a health effect, a low cost study, and consistency are among these (the same exposure will produce the same concentration of the biomarker every time). Without these, the biomarkers have ideal characteristics, their use as a strong predictor of exposure has limitations. Reflexes of varying complexity can be found in organisms with a nervous system.

CONCLUSION

A reflex is triggered by neural pathways in the nervous system known as reflex arcs. A stimulus causes a neural signal to be sent to a synapse. The signal is then transmitted across the synapse to a different neuron, which produces the desired response. Because these neural signals do not always reach the brain many reflexes are an automatic response to a stimulus that does not require or receive conscious thought. Many reflexes are fine-tuned to help the organism survive and defend itself. This is seen in reflexes such as the startle reflex, which responds automatically to unexpected stimuli, and the feline righting reflex.

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Corresponding author Jerome Antony, Department of Laboratory Medicine, Sichuan University, China, E-mail: antonyjero@hotmail.com

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CONFLICTS OF INTEREST

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