Is Depression Truly Biochemical?

A historically famous question in the field of psychology has always been: “How are mental health disorders really developed?” A common misconception that one may have, (and that many psychologists previously did have!) is that mental health disorders are only developed as a result of one factor. However, research has found that while mental health disorders can develop as a result of biological predisposition, they are equally likely to develop as a result of environmental factors. Furthermore, mental health disorders are complex, and usually manifest their symptoms due to a variety of factors, which differ on a subject-to-subject basis. Using the example of depression, this essay will explore the extent to which biological and chemical factors play a role in the development of mental health disorders.

According to the American Psychiatric Association, depression, more specifically major depressive disorder, is “a common and serious mental disorder that negatively affects how you feel, think, act, and perceive the world.” Individuals with depression often undergo depressive phases - usually lasting for longer than two weeks at a time - which are characterised by feelings of intense hopelessness and/or worthlessness. While depression usually requires a trigger to manifest itself physically, some individuals seem to be more at risk of experiencing symptoms than others. The biochemical composition of a person is said to act as one of the risk factors for experiencing the disorder.

From a biochemical perspective, depression was previously said to be correlated with a deficiency in the so-called “feel-good chemical” - serotonin. Serotonin is a neurotransmitter associated with regulated emotion and is responsible for many essential biological processes. It is produced using the nonessential amino acid tryptophan. In regular cases, 1% of the body’s tryptophan is converted to serotonin through enzyme-catalysed reactions. According to the “serotonin hypothesis,” individuals with depression face a predisposed deficiency of serotonin, causing their mood to seem irregulated, and causing them to experience the feelings associated with the neurotransmitter less often.

Although the serotonin hypothesis has been a widely accepted theory since the 1960s, recent research has come to suggest that this may not be an entirely valid explanation. A study published in 2023 by Moncrieff et al. conducted an analysis on previously carried out research, with the aim of seeing whether the results were significant enough to support the serotonin hypothesis.

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The researchers ultimately concluded that, due to sample sizes and other confounding variables, the results of the studies which they analysed may not have been significant enough to establish a correlational relationship between depression and serotonin levels.

This information begs the question: Why then, are selective serotonin reuptake inhibitors (SSRIs) the most effective and most commonly prescribed kind of antidepressant medication? Although there is no concrete answer to this question yet, the “permissive hypothesis” suggests that SSRIs indirectly regulate levels of norepinephrine - another chemical which many consider to be associated with depression. Furthermore, SSRIs seem to be both effective, as well as relatively safer in terms of side effects, as compared to alternatives.

Whether or not serotonin plays a part in depression, the effectiveness of SSRIs as antidepressants implies that brain chemistry does have some kind of role in the development of the disorder. Regardless, it is imperative to continue to explore the field of mental health disorders, to both better understand, as well as develop effective, low-risk treatments for them. It is also important to keep in mind that depression, like many mental health disorders, is nuanced, and although more research must be conducted into the biochemistry behind it, the main priority for psychologists and biochemists alike should be to support those suffering from it.

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CITATIONS

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