Psychosomatic Medicine, Psychoneuroimmunology and Psychedelics

By Ana Maqueda

"The Ancients said that the animals are taught through their organs; let me add to this, so are men, but they have the advantage of teaching their organs in return." Johann Wolfgang von Goethe

Ana Maqueda
ana@maqueda.org
Ana Maqueda is a clinical psychologist and writer in Madrid, Spain.

Freud developed psychoanalysis trying to explain the cause of illness which could not be traced to anatomical sources.

Nowadays, most psychotherapists who follow the cognitive-behavior paradigm treat the mind as something separated from the body. Inversely, most physicians treat the body as if it were detached from mind and emotions. However, the need to take down these barriers and to integrate body and mind therapies is becoming increasingly clear to both psychotherapists and physicians.

The first references to the mind-body connection are found in Hippocrates and Galen, whose teachings about the imbalances in emotions and passions, and their translations as physical illnesses, survived well into the eighteenth century. Descartes' mind-body dualism marked the start of a breakdown of the relationship between mind and body.

In the nineteenth century, physicians believed that all diseases were the result of some sort of anatomical abnormality. Freud developed psychoanalysis trying to explain the cause of illness which could not be traced to anatomical sources.

In the early twentieth century, Walter Cannon and his homeostatic theory stimulated new interest in the relationship between affect, physiology and health, fostering the emergence of two schools. One of these schools, called "psychosomatic medicine," approached discrete emotions from the psychoanalytic paradigm. Franz Alexander, in the 1920's and 1930's, was its main theoretician, who along with Helen Flanders Dunbar, sought to explain many somatic diseases–such as asthma, psoriasis, hypertension and gastric ulcers–as arising from mental disorders.

The second school focuses on biological processes–rather than on discrete emotions–and is represented by Hans Selye, who introduced the concept of stress as a general adaptation syndrome that organisms develop in order to survive. He also noted the negative consequences of sustained stress: fatigue, exhaustion and depression of the organism. Selye discovered the mechanism by which normal psychological stressors and biogenic stressors increase the action of the neuroendocrine hypothalamic-pituitary-adrenal axis, increasing the levels of hormones such as glucocorticoids (like cortisol), which in turn lower the proliferation of immune cells.

The complex relationships between the brain, the neuroendocrine and immune systems, and emotions

Empirical evidence available nowadays shows bi-directional communication between the central nervous system, the immune system and neuroendocrine mechanisms, via neurotransmitters (dopamine, serotonin, adrenaline, noradrenaline) which can directly mediate the immune response, given that immune cells T and B lymphocytes have receptors for hormones and neurotransmitters on the surface of their membranes. Some neuropeptides secreted by neurons, which are involved in pain transmission, have also been identified as immunomodulators, and cytokines, a type of activating chemical signaling cells of the immune system, also occur in the nervous system. Under disease conditions, when the organism needs to recover homeostasis, the immune system can reset brain-integrated neuroendocrine mechanisms to promote immune processes at the expenses of other physiologic systems [1].

Neurotransmitters are considered the most direct functional link between the central nervous system and immune processes. Elevated levels of catecholamines (epinephrine, norepinephrine and dopamine) were associated with an increased incidence of infectious diseases in the upper respiratory tract. Several longitudinal, prospective studies showed that rheumatoid arthritis, pain and depression tend to be predictive of each other [2].

Currently, neuroscientists like Antonio Damasio associate basic emotions with distinct patterns of cardiorespiratory activity [3]. Eysenck and Grossarth-Maticek (1995) have provided robust results from longitudinal studies, showing that some patterns of personality are good predictors of certain diseases such as cardiopathies (behavior pattern type 2, where raw anger and hyper excitement) or cancer (type 1, emotional repression and helplessness). On the other hand, neuroscientist Richard Davidson also found that meditation (mindfulness) may change brain and immune function in positive ways [4].

The need for the multidisciplinarity of the human being science

The empirical evidence in the field of psychoneuroimmunology (Ader, R., 1981) has shown that immune activity, as well as some psychological parameters, can be modified by classical conditioning processes. This young discipline is providing scientific facts of the interrelations between emotions, stress, anxiety, depression, chronic pain and the immune system. Pro-inflammatory cytokines play a key role in cardiovascular disease, arthritis, Type II diabetes, osteoporosis, Alzheimer's disease, periodontal disease and some cancers [5]. Negative emotions like depression and anxiety enhance the production of pro-inflammatory cytokines, leukocytosis and increased natural killer cell cytotoxicity, as do psychological stressors [6]. Some of the current scientific research in cancer shows that the boost of the immune cells neutrophils could be a promising treatment against solid tumors [7].

All of the above shows that new paradigms of a multidisciplinary, holistic, non-dual and integrative science of the human being are emerging, which conceive the human being as a delicate, intricate and interconnected universe and away from old dualistic conceptions. Let's see how psychedelics could be invaluable tools to foster this evolution.

"We are not primarily biological, with mind emerging as a kind of iridescence, a kind of epiphenomenon at the higher levels of organization of biology. We are hyperspatial objects of some sort that cast a shadow into matter. The shadow in matter is our physical organism." - Terence McKenna

Having noted only minimally the bidirectional and complex relations and interactions between body, mind and emotions, and how hormones, neurotransmitters, leukocytes and neurons share a common language, we can see the multiple potentials of psychedelics -both in psychotherapy (powerful emotional insights, treatment of traumas and psychological conflicts, coping with stress, positive experiences and expressing emotions) and medicine (immunoregulatory-antidepressants drugs, addictions, pain and anxiety), all of which are complex universes whose mysteries are yet to be unveiled.

As Michael Kometer and Dr Franz Vollenweider recently published [8], the downregulation of prefrontal 5-HT2A serotonin receptors (that are targets for hallucinogenic compounds) might underlie some of the therapeutic effects of hallucinogens in the treatment of depression, chronic pain and anxiety. (Anxiety and depression are interrelated with stress, which also affects the serotonin system.)

MDMA's ability to facilitate better emotional management, and retrieval of traumatic memories without fear, could be a powerful catalyst of healing for disorders such as post traumatic stress disorder (PTSD). As mentioned above, hormones chronically disturbed by stress may contribute to brain changes, immune deficits, depression, emotional and behavior symptoms and somatic disorders. The first authorized clinical research on PTSD using MDMA was carried out in Madrid, Spain by clinical psychologist José Carlos Bouso [9], which established the psychological and physiological safety of this chemical. Although further research is necessary, some studies are starting to reveal the hormonal effects of this substance [10].

Also in Spain, Dr. Jordi Riba conducted the first controlled pharmacological study of ayahuasca in humans [11]; in recent research, Dr. Riba and his team found, using the neuroimaging technique SPECT (single photon emission computed tomography), that ayahuasca administration led to increased blood perfusion in brain areas implicated in somatic awareness, subjective feeling states, and emotional arousal [12]. The implications of this research, and prospective ones, are promising for depression and anxiety disorders, and behind the intrincated pharmacology of ayahuasca may lead to breakthrough solutions for neurodegenerative disorders like Parkinson, and the future development of new antibiotic agents.

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In the seventies, Dr. Khorramzadeh administered ketamine to 100 psychiatric patients with various psychosomatic diseases, like tension headaches, depression, anxiety, phobias, obsessive-compulsive neurosis, hypochondriasis and ulcerative colitis. Dr. Khorramzadeh reported that 91 of his patients were doing well after six months, and 88 of the subjects remained well after one year [13].

Some publications in the 1970's detailed healing properties of LSD in disorders such as allergies, ulcerative colitis, rheumatoid arthritis and other inflammation of the joints. LSD and drugs related to it could have potent anti-inflammatory effects, and could play an important role in the immune system, since it affects hormones. Charles Nichols, associate professor of pharmacology at the LSU Health Sciences Center in New Orleans, has began to investigate them using tissue cells and cultured animal cells.

It is interesting to note that many of the drugs currently used to treat various disorders keep a close molecular relationship with some psychedelics: Sumatriptan, the currently most effective drug to treat migraines, is chemically very similar to DMT, and Methysergide, also prescribed for migraines, is based on the LSD molecule.

Cannabinoids, among other properties, act on the immune system by decreasing inflammation when brain damage occurs. Since neuro-inflammation and neuroimmune activation have been shown to play a role in the etiology of a variety of neurodegenerative disorders such as Alzheimer's disease (autopsy reveals less expression of CB1 receptors in the hippocampus and frontal cortex), the implications for further neuroprotection applications of cannabinoids are promising.

The advance of psychedelic science is still slow, and encumbered by lingering bans and legal hurdles to research, but it seems increasingly unstoppable. •

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