

Oral presentation

Understanding mechanisms causing depression and anxiety and how this impacts treatment

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The most widely used drugs in depression have been single action drugs, such as specific serotonin reuptake inhibitors (SSRIs). More recently, drugs with a dual mechanism of action, particularly serotonin noradrenaline reuptake inhibitors (SNRI's), such as venlafaxine, duloxetine, and milnacipran, have been more widely used. Several clinical studies have now clearly demonstrated that dual action drugs are more clinically effective than single action drugs. The evidence supporting this will be reviewed. Also, while there is no dose response for single action drugs, there is for dual action drugs. The reasons for both these clinical findings were not clear, but recent substantial progress has been made in our understanding of the mechanism of action of depression at both the cellular, receptor, and intra-cellular levels. These include the interactions of cell body receptors, synaptic receptors, synaptic neurotransmitter release and uptake, as well as the intracellular events secondary to the release and binding of neurotransmitters with the second messenger systems. One of the most relevant findings has been the close interaction at the cell body level of noradrenaline and serotonin neurons, and how these systems influence each other. Indeed, these findings suggest that the reason for the clinical findings is based upon these interactions. Additionally, possible combination treatments for treatment-resistant depression will be discussed, as will as the very limited trials supporting these possibilities. Finally, the increased understanding of changes within the brain have implications for development of future treatments for anxiety and depression, and these will be discussed.