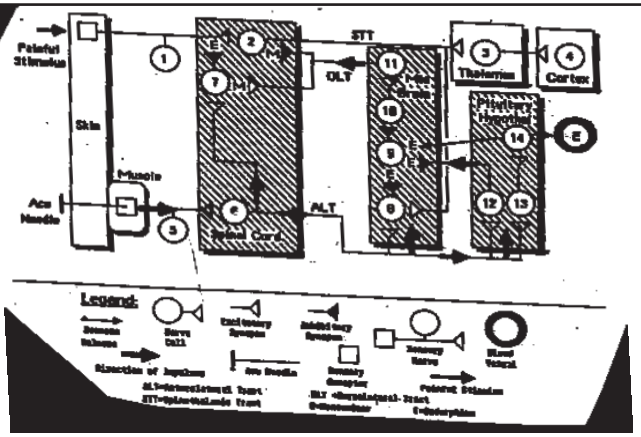
Figure 4. Schematic Representation of the Neurologic Effects of Acupuncture with Low Frequency High Intensity Stimulation



An injury to skin activates small afferent A-delta and C-fibers (1) which synapse on the spinothalamic tract (STT) in the spinal cord (2) to the thalamus (3) and cortex (4). Dark triangles are excitatory synapses, and white are inhibitory. Acupuncture needle activates small afferent nerve in muscle (5) which goes through the anterolateral tract (ALT) cell (6) to the spinal cord, midbrain, an pituitary-hypothalamus (PH) complex. In the spinal cord an endorphogenic cell (7) releases enkephalin or dynorphin which causes presynaptic inhibition of cell 1. Cell 6 ascends ALT to midbrain and disinhibits cell 10 via 8 and 9 enkephalin release. This activates the raphe nucleus through cell 11 and provides for postsynaptic inhibition of cell 2 and presynaptic inhibition of cell 1 via monoamine release in the spinal cord. Activation of the PH generates circulatory B-endorphin and ACTH resulting in cortisol release from the adrenal cortex possibly explaining the anti-inflammatory effects. (Adapted from: Pomeranz B, Stuz G, eds. *Scientific Basis of Acupuncture*. New York, NY: Springer-Verlag; 1989).