



Mythology may NOT be Just A Myth: Theoretical Biology may NOT be Just A Theory: Connecting The Dots: Was "Sanjeevani" Naloxone?

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Abstract

Steve Jobs, the co-founder of Apple Inc., once spoke that the connection among the past-dots happens in the present times, that explore the past in the retrospect. Henceforth, in the below-mentioned and elaborated text, the focus is on the possibility to explore the science underplayed when "Sanjeevani" (the reviver) was documented in the Hindu mythological epic, titled Ramayan written by sage Valmiki. It is our presumptive analysis that the sub-plot woven around "Sanjeevani" might have been to postulate the theoretical biology surrounding the catastrophic inhalational or infiltrating routes of opioids against the enemies in the ancient times and the corresponding use of inhalational or intranasal routes of antidotes to revive the victims. Who knows this was setting the grounds for future use of opioids (\approx Sammohini) under controlled conditions to induce analgesia-anesthesia and subsequent reversal of analgesia-anesthesia by naloxone (\approx Sanjeevani). Although, in recent texts, *Rhodiola* and *Selaginella* species have been suggested to come the closest to the claim as being the mythological Sanjeevani, it is our alternative postulation and interpretation that naloxone can be the elusive-enigmatic Sanjeevani as a derived component of thebaine, the extractable alkaloid of *Papaver bracteatum*.

Perspective

Steve Jobs, the co-founder of Apple Inc., once spoke [1] that the connection among the past-dots happens in the present times, that explore the past in the retrospect. This signifies that in the present times, we should continue creating and contributing to dots so that in the future, our descendants can make the connection in their times. All the dots soon become the part of history irrespective of whether they (a) had been documented or (b) are remembered or (c) have been forgotten easily, leaving the field open to human speculations and interpretations. Henceforth, in the below-mentioned and elaborated text, the focus is on the possibility to explore the science underplayed

when "Sanjeevani" (the reviver) was documented in the Hindu mythological epic, titled Ramayan written by sage Valmiki [2].

The intent of our text is not to elaborate on the exact time in the history when and where the events depicted in Ramayan happened. That may be the down-side of being a mythological epic. However, the inspiration for our text is based on the assumption that the ancient writers might have chosen to document their theories, their discoveries or their inventions in probably the best communication tool of all times, i.e., story-telling. Our ancestors might have conceived that the text or legend (written or oral) would pass down through the generations if interesting, relatable and inspiring stories could be woven around the primary information that was intended to be shared with the future generations. Therefore, it is our assumption that "Sanjeevani" is one such piece of information that might have been so obvious to modern human beings and yet we might have mistakenly overlooked or ignored the plausible reality behind "Sanjeevani".

Firstly, we need to review the sub-plot woven around "Sanjeevani" as corresponding to {book-chapter-verse/verse} Valmiki's Ramayan [2]. In response to a single weaponry wherein multitude of arrows were falling off the skies over the apes from an invisible source {6-73-57}, Ram, the man-god and his brother, Laksman fell unconscious (suspended animation) {6-73-74}. Then Hanuman, the ape-god, went to a mountain-of-herbs from where Mount Kailash's summit was visible {6-74-30/31}. Unable to recognize and pick the four herbs {6-74-33} as suggested by Jambavan, the ape-leader, Hanuman brought the whole mountain-of-herbs {6-74-68/69}. Just the smell emanating from the mountain of herbs recovered Ram and Laksman along with the multitude of apes from their sleep states {6-74-73}. Hanuman then returned the mountain-of-herbs back to its original site {6-74-77}.

Sushen, the ape-physician, himself had been in the state of unconsciousness during the above-mentioned turn of events {6-73-63}. However, later on during the war, when Ravan, the demon-king, used a spear tinged with 'blood' to pierce Laksman's heart {6-101-29/36}, Sushen was asked for medicinal

instructions {6-102-2}. Concluding that Laksman is in state of unconsciousness without any associated changes in the color (central/face and peripheral/hands) or heart or breathing {6-102-15/16/19}, Sushen asked Hanuman to bring the same four herbs from the mountain-of-herbs. Hanuman had to bring the whole mountain again due to his inability to recognize independent herbs. This time, Sushen had to extract individual herbs from the mountain and then make unconscious Laksman to smell/inhale the extract of the herbs. This revived Laksman {6-102-34/35/36/37} from his unconsciousness.

Hereafter, we need to analyze these mythological events and present our perspective based on our limited interpretations of events. The weaponry used as a invisible source to simultaneously induce a state of unconsciousness in multitude of apes and men could have been an aerosolized source of opioids with propensity to be absorbed not only from mucosa but also the skin too. This is NOT unusual to visualize if one reflects on the turn of events in the recent modern history when in October 2002, the Russian establishment was suspected to have supposedly used aerosolized opioids via ventilation system to defuse hostage crisis and subdue militants inside Dubrovka theater in Moscow, Russia [3]. Moreover, one can either easily relate to the fantasy of fear of absolute sleep in the poppy field scene of *The Wizard of Oz* (1939) [4] or accept the reality of *An Alert Walk Through Poppy Field* growing opium poppy (*Papaver somniferum*) [5]. Now the next question that comes to mind is what could have easily reversed the state of unconsciousness supposedly induced by aerosolized opioids. The obvious remedy known to modern era is naloxone that can be obtained by conversion from thebaine [6], an alkaloid which is a major constituent of a wild plant species commonly called Iranian poppy (*Papaver bracteatum*) [7]. It is NOT clear whether wild *Papaver bracteatum* grows at a site from where Tibet Autonomous Region, China's Mount Kailash's summit is easily visible in any of the four directions in the present day or whether it even grew at that site during the mythological days. However, wild *Papaver bracteatum* may come closest to what Hanuman was supposedly expected to look for in the mountain-of-herbs. When the writer documented mountain-of-herbs, he might be indicating that the whole mountain full of wild *Papaver bracteatum* might have been needed to simultaneously revive the multitude of apes and men (via inhalational route that seems to be possible for naloxone too [8]). Elsewhere, the writer might have envisaged that Sushen, the ape-physician, might have extracted concentrated

amounts of thebaine [9-10] that can have both stimulatory revival properties (first herb: Mrutha Sanjeevani \approx naloxone) and calming painless properties (second herb: Vishalaya-Karani \approx morphine derivatives; as Vishalaya means "painless" [11], this herb's name may symbolically mean "painless-state restoration by removal of pain inflicted by pinned arrows"). This high concentrated extract would have been required when Laksman's heart was pierced by Ravan's symbolic spear that might have instilled large doses of opioids directly into Laksman's circulatory system requiring the intranasal (mucosal) route for antidote (Mrutha Sanjeevani \approx naloxone) as compared to non-specific inhalational route in the open surroundings for the mass revival of unconscious apes and men. In the year 1967 of the modern era [12], it had been shown that naloxone directly and thebaine indirectly antagonize morphine (an opioid); and this further substantiates our presented analysis. As a side note, the remaining two herbs, Suvarna-Karani (skin color restoration) and Sandhani (skin integrity restoration), that Hanuman was supposedly expected to look for in the mountain-of-herbs, could represent the modern day's hematinics and skin-glue (plant sap) [13] respectively.

In simpler terms, it can be easily presumed that the sub-plot woven around "Sanjeevani" might have been to postulate the theoretical biology surrounding the catastrophic inhalational or infiltrating routes of opioids against the enemies in the ancient times and the corresponding use of inhalational or intranasal routes of antidotes to revive the victims. Who knows this was setting the grounds for future use of opioids (\approx Sammohini [14]) under controlled conditions to induce analgesia-anesthesia and subsequent reversal of analgesia-anesthesia by naloxone (\approx Sanjeevani). Although, in recent texts, *Rhodiola* [15] and *Selaginella* [16-17] species have come closest to the claim as being the mythological Sanjeevani, it is our alternative postulation and interpretation that naloxone can be the elusive-enigmatic Sanjeevani as a derived component of thebaine, the extractable alkaloid of *Papaver bracteatum*.

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