



Love and death in Wagner's *Tristan und Isolde*—an epic anticholinergic crisis

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In Wagner's opera *Tristan und Isolde* the main protagonists take a love potion, which has various side effects and possibly causes Isolde's death. Gunther Weitz argues that the symptoms fit with severe anticholinergic syndrome

In the opera *Tristan und Isolde* Richard Wagner reports the poisoning of Tristan and Isolde by a "love potion." Shortly after ingestion of the potion, the protagonists declare their love, and both die during the opera. The opera has been extensively interpreted by psychoanalysts¹⁻³ and musicologists,⁴⁻⁶ but, although at least Isolde's death remains unexplained and might be due to the potion, the medical profession has not yet analysed the case. I present evidence to suggest that the lovers were affected by a severe anticholinergic syndrome and that this is the most likely cause of Isolde's death.

The story of Tristan and Isolde (Iseult), who fell in immortal love after drinking a magic potion, originated in the 6th century and was told in England, Ireland, and the north of France. It first appeared in writing in the 12th century, and Wagner used as his source the poetry of Gottfried von Strassburg, from around 1210.⁷ Although Strassburg was familiar with alchemy,⁸ he did not report the side effects of the love potion. Wagner's detailed description of the symptoms suffered by the protagonists may indicate his attention to possible ingredients.

Presentation of the case

Tristan, nephew of King Marke and knight of the Cornish court, and Isolde, princess of Ireland and King Marke's bride, try to commit suicide together by drinking poison which, however, turns out to be a "love potion." Within moments the first symptoms of an

intoxication occur that can be interpreted as tachycardia, flush, and blurred vision (see synopsis of symptoms in the table). Tristan and Isolde fall passionately in love, but confusion and disorientation ensue. A few days later in a nocturnal scene (Act II), light intolerance is evident. At dawn Tristan is injured in a fight with a rival and later dies from his injuries (Act III). Shortly afterwards, Isolde experiences hallucinations and dies.

Wagner's use of the "Tristan chord" (fig 1) every time the potion or its effects are mentioned⁵ sheds some light on the toxicology of the active agent. Shortly after the drug is ingested, the Tristan chord changes from one notation to another, indicating a rapid onset of action. The symptoms described in the next scene are clearly attributed to the potion, and the Tristan chord is repeated prominently. In a love scene a few days later (Act II, scene 2) both protagonists express marked light intolerance, and that this is caused by the potion is suggested by a cluster of Tristan chords. At the moment of Tristan's death there is no Tristan chord, whereas Isolde's remarkable behaviour before her demise is explained as being due to the potion by the occurrence of a Tristan chord. This latter scene is widely known as the "Liebestod" (fig 2).

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Love medicine in Europe

Medieval strategies for modulating mood drew extensively on Roman ideas.¹³ Food was believed to influence humors, and for specific effects meals were prepared according to elaborate and refined ceremo-

Synopsis of the symptoms caused by the love potion described by Wagner⁹ and the symptoms of an anticholinergic syndrome caused by *Solanaceae*¹⁰⁻¹²

Wagner's description of the symptoms	Symptoms of intoxication with <i>Solanaceae</i>
—	Dry mouth, intense thirst (initial symptoms)*
Act I, scene 5	
They are seized with trembling They clutch convulsively at their hearts [fast rhythm, Tristan chord] and raise their hands to their heads Then their eyes seek out one another, are cast down in confusion . . .	Tachycardia, palpitation Flush, hyperthermia Blurred vision
—	Urinary retention*
Tristan—bewildered [fails to recognise King Marke]: ". . . Which King?" [Tristan chord] Isolde—confused: ". . . Where am I? Am I alive? . . ." Isolde falls on his breast, unconscious	Disorientation Confusion Coma
Act II, scene 3 (a few days later)	
[Intolerance of light] "Oh, now we were dedicated to night! Spiteful day with ready envy could part us with his tricks . . ." [Cluster of Tristan chords]	Pupillary dilatation, photophobia (may persist for several days)
Act III, scene 3 (a few weeks later) ("Liebestod")	
Isolde, aware of nothing round about her, fixes her gaze with mounting ecstasy upon Tristan's body: "How softly and gently he smiles, how sweetly his eyes open—can you see it my friends, do you not see it? . . . Do I alone hear this melody, so wondrously and gently. . ."	Visual and auditory hallucinations
—	Ataxia, hyperactivity, convulsions*
Isolde dies [Tristan chord]	Death

*Symptoms not represented in the opera.



Fig 1 The "Tristan chord" in Wagner's *Tristan und Isolde*

nies.¹⁴ Many ingredients that were associated with aphrodisiac properties—such as egg, peacock, fowl, beef, venison, crustaceans, leek, turnip, asparagus, pomegranate, mustard, and pepper^{14 15}—would not be recognised as such nowadays. Others have reproducible effects: cantharidin, an extract from dried bodies of blister beetles, causes urethral irritation sometimes followed by erection. Yohimbine, a central acting α receptor blocker derived from the bark of an African tree, has since been recommended for the treatment of impotence.^{15–17}

The variety of psychotropic drugs in medieval Europe was small, since only a few local plants are able to exert an action on the central nervous system. Wine and beer were widespread, but the most effective hallucinogenic agents were derived from nightshade plants (Solanaceae).^{18–20} Recipes of love stimulants frequently contained such plants, especially henbane (*Hyoscyamus niger*), mandrake (*Mandragora officinarum*), and in later times thorn apple (*Datura stramonium*).^{14 19 21} These plants have in common high concentrations of hyoscyamine, atropine, and scopolamine—anticholinergic alkaloids that act on both the



Fig 2 The "Liebestod" in a picture by Wilhelm von Kaulbach (1866)

peripheral and central nervous system. Hyoscyamine and atropine are found to have more exciting properties, and scopolamine more relaxing and hallucinogenic properties.²²

Knowledge of the pharmacological properties of Solanaceae was handed down in folk medicine,^{18 21} and they were often referred to by Shakespeare in his plays.^{19 23} Their use as hallucinogens declined during the 19th century with the increasing availability of more effective drugs such as cannabis and cocaine.²¹

Discussion

Wagner's presentation of Tristan and Isolde's symptoms is as close to intoxication by Solanaceae as can be suggested in an opera (see table). The rapid onset of peripheral anticholinergic symptoms and the symptoms marked by the Tristan chord are typical of an overdose of this agent. The initial presentation of dry mouth and intense thirst is not described, perhaps because of difficulties in illustration. Instead, tremor is indicated, which would be unusual because the biochemical lesion is predominantly at muscarinic and not nicotinic sites except in massive overdosing, which is not described in the first scene. Hallucinations caused by Solanaceae are mostly visual and consist of simple images in natural colours—in contrast to other hallucinogens such as lysergic acid diethylamide (LSD) or mescaline, which typically produce a brilliant and shifting interplay of light and colour.¹⁰ However, auditory hallucinations as in the "Liebestod" have also been described after ingestion of Solanaceae,¹¹ and emphasising the audible may be a stylistic device in an opera. Fatalities in adults as a result of overdose of Solanaceae are rare and can be secondary to cardiac or respiratory arrest.^{10 12}

The symptoms of an intoxication usually resolve within 24–48 hours; however, pupillary dilatation can persist for several days,¹⁰ as described in Act II. Much later, in his dying scene, Tristan is no longer intoxicated (no Tristan chord), and his death must therefore be attributed to his injuries. Isolde's psychotic behaviour when she approaches Tristan's body might be interpreted as hysteria, but this could not explain her death. Wagner's use of a Tristan chord in the moment of her death indicates that both hallucinations and death are attributable to the love potion. It is likely that she took a further draught. Wagner, unlike Gottfried von Strassburg, makes no reference to there being no love potion left after the first ingestion.

Alkaloids from Solanaceae may induce a delirious state, but, despite their frequent use in medieval love potions, they do not have specific eroticising properties. Wagner takes this into account by illustrating that Tristan and Isolde are in love before drinking the potion, though unable to admit it. Hence, the "love potion" only has a liberating effect. The German novelist Thomas Mann claimed that Tristan and Isolde could as well have drunk a glass of water.⁷ Nevertheless, Wagner's close description of an anticholinergic syndrome favours an ingestion of a potion containing Solanaceae and underlines his careful treatment of this issue.

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Summary points

The article analyses the composition of the love potion in Wagner's opera *Tristan und Isolde* from a medical view

The libretto and the music suggest that an anticholinergic compound is the active agent

Medieval love potions often contained anticholinergic alkaloids from plants of the Solanaceae family

The knowledge of the properties of Solanaceae was handed down in folk medicine until the 19th century

The unexplained death of Isolde at the end of the opera could be explained by a severe anticholinergic crisis

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Commentary: Signs of love, not a love potion

Jeff Aronson

Gunther Weitz has described the symptoms experienced by Tristan and Isolde in Wagner's opera after they have drunk the love potion. He concludes that the potion is likely to have contained an anticholinergic compound or compounds. This is an amusing idea, but to treat it seriously trivialises Wagner's opera.

The legend of Tristan (or Tristram) and Iseult (or Isolde) is from the 6th century but was not written down until the 12th century, when it became exceptionally popular, spawning about 80 versions in the next 100 or so years. Its popularity has not waned in 850 years. The first still extant version (circa 1150) was by the French poet Thomas, and later French versions are by Béroul (c 1180), Marie de France (c 1190), and Hélie de Borron (c 1190). Gottfried von Strassburg's early 13th century unfinished version (c 1210) relied on that of Thomas; in completing it, Ulrich von Türheim and Heinrich von Freiburg relied on a late 12th century version by Eilhart of Oberg.

In most versions the love potion is made by Iseult's mother when her daughter is about to be escorted by Tristan to Cornwall to marry King Mark, with the instruction to Iseult's nurse, Brangien (Brangäne) that it is to be given to Iseult and Mark on their wedding night. However, on the voyage, Tristan and Iseult find the flagon of potion and drink it. This version is recounted by, for example, Mallory (1485) and Joseph Bédier (1900, translated by Hilaire Belloc 1913). The fact that the lovers do not know that they are drinking a love potion makes the potion truly magic, for they

fall in love when they have drunk it. However, different versions contain two different types of treatment of the role of the love potion. In one (as in the version of Béroul) the potion has a real effect, while in the other (as in the version recounted by Thomas) it is purely symbolic. Some authors even leave it out altogether. For example, in Eduard Stucken's play (1916) ordinary wine replaces the potion, and in her novel *Tristan and Iseult* (1971) Rosemary Sutcliffe omits it, for the revealing and important reason that it "turns something that was real and living and part of themselves [their true love for each other] into something artificial, the result of drinking a magic sort of drug."

Although Wagner leaves in the magic potion (after all, it makes good drama), he makes an important change that suggests that he was of the same opinion as those who prefer to omit it. In his version, the lovers think that they are drinking poison, which Isolde has instructed Brangäne to prepare, thinking that she wants Tristan dead and to die herself; but Brangäne instead prepares the potion. The act of drinking it opens their eyes to the fact that they are in love and, thinking they are about to die, they allow the floodgates of their emotions to open. But the drink does not have to be a love potion; Thomas Mann's remark that it might as well have been water, perceptively quoted by Weitz, reflects the view (surely also Wagner's) that the potion is merely a mechanism for allowing the lovers to realise their love. That being so, what Wagner

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describes in the opera is the effects of love, not the effects of a drug. And the Tristan chord reflects not the supposed effects of the potion, but that love, the double discord that it contains, unresolved until the end of the opera, mirroring the discord of illicit love and sexual betrayal, as well as the dark-light dichotomy that saturates the whole opera.

The death of Isolde deserves special mention. Wagner originally applied the term "Liebestod" to the prelude to Act 1, not to the music that we now call "Liebestod," which he called "Verklärung." He had actually intended to make a separate piece of concert music from the two pieces. So the music that accompanies Isolde's death is her transfiguration, and the repetition of the Tristan chord shows that she dies of love's sorrow.

The fact that Wagner does not say that there was no potion left after the lovers had first drunk it does not imply that he intends us to think that Isolde took more later; he simply does not need to mention such an inconsequential detail in the opera, whereas there is room for this information in the less contracted poetic telling of Gottfried von Strassburg. Incidentally, Isolde's death from the sorrow of love echoes early events in Tristan's life, since his mother, Blanche fleur, died of sorrow at the death of his father, Rivalen. Tristan is so called because his mother brought him forth, as she says, in sorrow.

It is therefore no more than an amusing exercise to wonder what the potion might have contained if it was a drug that produced the effects that Wagner described. What he described could be regarded

as the effects of excess sympathetic nervous system activity in two people besotted by love. Such effects, were they drug induced instead of physiological, might well be produced by an anticholinergic drug, although they would not be exactly reproduced, as Weitz notes, and they might also be produced by a sympathomimetic compound such as ephedrine. The fact that Wagner does not mention thirst (which could, contrary to Weitz's view, easily be represented in the opera), and that he describes tremor and auditory rather than visual hallucinations (both noted by Weitz), supports the view that Wagner does not care what the potion contains and also suggests that whatever he thinks it contains (assuming that he thinks about that at all), he is not thinking of something anticholinergic.

As a footnote, Weitz seems to imply that the potion contains a single herb, but the early tellings recount how Iseult's mother made the potion from herbs and roots, and such a potion would certainly have contained many different compounds, most if not all of them without significant activity. Our understanding of medieval attitudes to aphrodisiacs is too rudimentary to comment on what people of that time might have thought such a potion should contain, although it is possible that they knew about the connection between *Atropa belladonna* and the attractiveness of the pupillary dilatation that its anticholinergic effect produces (for example, the name belladonna is first recorded in English only in the 16th century). Wagner's 19th century attitude to aphrodisiacs is irrelevant.

A Christmas visit

It was a dark and snowy evening, shortly before Christmas, when a woman with respiratory failure at the Eastern General Hospital in Edinburgh became ill enough to merit intensive care. As the hospital did not have an intensive care unit on site, we were called to transfer the patient across to the unit at Western General. A decision had to be made whether to anaesthetise her before transfer or whether to take her across awake—always a tricky decision. I chose the latter as her condition had not deteriorated over the past 24 hours and currently she was stable on supplementary oxygen, although breathless.

During the 15 minute journey across Edinburgh she seemed to be coping reasonably well. In this situation it is always a concern that the change in scene and the stresses of a bouncy ride in an ambulance could tip the balance and result in a rather inelegant intubation, and its aftermath: a unanimous verdict of the fallacy of not anaesthetising the patient before transfer.

Halfway there, in a darkened street in Trinity, the ambulance pulled to one side and the engine stopped. Just as my brain started to register all this, the back doors burst open and the ambulance driver's head appeared. "We're on fire. Everybody out!" he cried. The ambulance crew then grabbed the patient's trolley and she disappeared out into the street as if she were being buried at sea. The oxygen tubing went ping and the trailing end vanished into the gloom after her. The nurse and I snatched up the essentials, including the transfer kit and a bottle of oxygen, and followed her out.

It was very dark, with the street lamps providing an eerie orange glow. There was snow in the gutters and a cutting wind. I pulled the patient's blanket up higher to keep her warm but as I did so her feet poked out from underneath. Another ambulance,

we were informed, might take 10 minutes or more. We were all gathered round the patient, who was mute with disbelief. Even in this poor light she looked awfully blue, and the shivering wasn't helping her breathing.

"Time for action," I thought, and rang the nearest doorbell. A man in his 30s tentatively opened the door. Putting on my best emergency doctor voice I explained the circumstances and asked if we could bring the patient in. He looked unbelievably behind me at our little group, but eventually agreed—so in we went with all our kit, monitors, ambulance crew, and the patient, who didn't look much better even in the light. By this time a woman had joined the man. They were looking behind us as if there were more to come, perhaps Jeremy Beadle. We spread out the intubation gear on the hall floor and kept a close eye on the oxygen gauge, which had fallen alarmingly. The patient was coping admirably and continued to do so throughout the wait for the second ambulance. On its arrival we all piled out again into the snow and disappeared into the night. The couple in the house watched our departure in disbelief. We arrived safely at the Western General Hospital, and our patient was able to receive more orthodox care.

I never was able to remember exactly where the ambulance stopped, as I would have liked to have thanked the couple for their help and offered a debriefing on the whole bizarre episode. I have a suspicion, however, that the surreal nature of their experience will provide them with a good story for their grandchildren.

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