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Influence of eclipses on microbiological growth rates

Prabhakar Vegaraju, Alex Hankey and Ramesh Mavathur

Abstract
Previous experiments established strong effects of solar eclipses on vaccine production, by observing increased vaccine production during three solar eclipses in 2012-2013, thus showing that eclipses' malefic influences oppose life. Here, we report experiments on *E. Coli* exponential phase growth rates on days of total and partial eclipses of sun and moon, using the same laboratory methods as in our previously reported E. Coli growth experiments. Solar eclipses slowed bacterial growth rate to a greater extent than lunar eclipses; total eclipses showed greater impact than partial eclipses. The solar eclipse results are consistent with the earlier findings; the lunar eclipse results are smaller in magnitude, indicating weaker effects. These experiments therefore suggest that eclipses slow exponential phase bacterial growth rates. They confirm that eclipses exert global, malefic, life-opposing influences, supporting ancient knowledge from Jyotisha astrology, and extending previous findings on virus propagation to bacterial growth, and on solar eclipses to lunar eclipses.

Keywords: Jyotisha, eclipses, microbiology, exponential phase growth, *E. Coli*

Introduction

Jyotisha astrology is often relied on to make predictions about the kinds of disease to which a native may be susceptible, with detailed information on the timings of disease inception, severity and cure. Many recognize that this is only possible if the planetary influences in the native's Janma Kundali affect physiological function at the cellular level. In accordance with this insight, Dr. Rameshrao Narayan proposed a series of experiments on biological processes including cell growth, virus propagation, and vaccination to test the influence of various grahas on those processes [1-6]. Jyotisha influences tested included the influence of Grahas, Guru, Chandra, Sani and Rahu [2, 7], and also solar eclipses [1, 8], since Jyotisha tradition [9, 10] states that the time of an eclipse is even more malefic than the influence of Rahu [11], and that one should cease all activity at such times. The experiments, conducted at various times from 2007 to 2013, established that: (1) Guru consistently supports the life of cells, increasing growth and weight gain; (2) Rahu opposes life, decreasing cell growth rates and increasing virus propagation; and (3) Chandra, when strong, both increases growth and protects cells from the influence of Rahu [12]. All three effects were seen consistently in the experiments, which strongly supported statements found in the ancient Vedic tradition of Jyotisha [9, 10].

In addition, Dr. Rameshrao's experiments, investigated an influence held to be even more adverse on health than Rahu, namely that of solar eclipses [1, 6]. On days of three solar eclipses, 20th May and 14th November 2012, and 10th May 2013, virus propagation was even more successful than when performed under Rahu's influence. Furthermore, because they used the same experimental protocol, results could be combined to make them more decisive. Jyotisha predictions in this regard thus received strong confirmation. An earlier article describing the first two eclipses [1] was presented at the 2013 WAIRCO conference in Colombo, and received the 'Best Paper in Conference' award. A second experiment on 10th May, 2013, on Avian REO Retrovirus also showed strong enhancement during time period when the moon's shadow was touching the earth [8]. These experiments indicate that viruses propagate far better on days of solar eclipses, confirming that malefic *Graha* influences enhance virus production, opposing life, and that solar eclipses are the most powerful malefic influence so far observed. Interestingly, one eclipse, which was annular, had weaker effects than the other two [8].

Based on the success of Dr Rameshrao's experiments, it was decided to perform a similar series of experiments on easy to grow bacteria that can be repeated in colleges. A non-pathogenic strain of *E. Coli* was selected and 150 growth curves generated between 16th February, 2017, and 11th August, 2018 [13, 14].

Among the influences that we attempted to observe were the *Shadbalas* of the *Saptagrahas* [13], *Guru* or *Rahu* in *Lagna*, and that of *Chandra* when strong [14], i.e. when in second half of *Shukla Paksha*, or when *Swa*, *Moolatrikona*, or *Uchcha*. Three of the selected days were those of partial and total solar eclipses, while three were days of lunar eclipses, either partial or total. This article reports rates of exponential phase growth on these six eclipse days, empirically testing hypotheses based on earlier results that eclipses would slow bacterial growth due to their malefic effects.

Methods [15].

The selected *E. coli* was K-12 MG 1655, a non-pathogenic strain kept at -80^{0}C in glycerol stock, was obtained from NCBS, Bengaluru (National Centre for Biological Sciences). Thirty three growth curves (GCs) were generated on the six eclipse days from August 2017 to July 2018, with time of main flask inoculation (TOFI) taken as *Jyotisha Muhurta* [16].

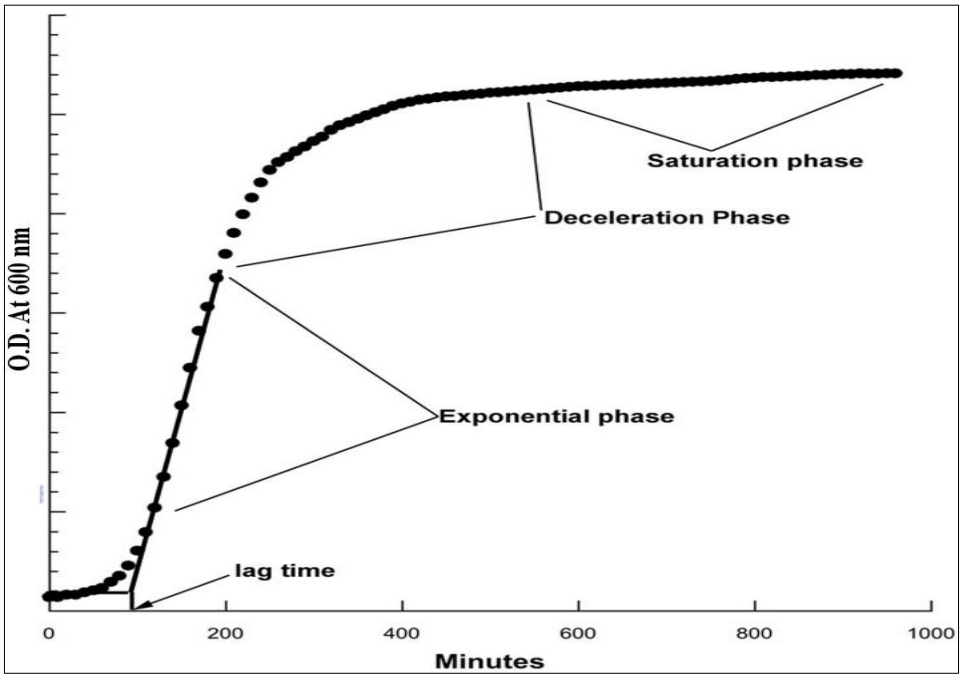
Growth medium: pre-autoclaved Luria Broth (catalog no. M575-500G, HiMedia Laboratories Pvt. Ltd., Mumbai, India) kept at 37^{0}C in a 180 rpm incubator-cum-shaker (Model: 116736, GeNei™, Mumbai, India). First, the *E. coli* strain in glycerol stock was streaked onto pre-autoclaved YT agar plates (catalog no. G032-500G, HiMedia Laboratories Pvt. Ltd, Mumbai, India), incubated overnight at 37°C, and stored for use within 3 days. The second preparatory step was to pre-autoclave intended containers with the correct amount of Luria Broth in them: 50 ml portions of distilled water were mixed with 1 gm Luria Broth powder, and either put (1) directly into 250 ml conical flasks (Catalogue no. 4980021, Borosil Glass Works Ltd, Mumbai) as main culture or its blank control; or (2) 3 ml portions were placed in ten or more 15 ml Falcon tubes (Catalogue no. 546021, Tarsons Products Pvt Ltd, Kolkata). Then, both conical flasks and Falcon tubes were autoclaved at 120 ^{0}C and 15 bar pressure for 30 minutes. Extra conical flasks and Falcon tubes, thus prepared, were stored for later use.

Next day, to make the pre-culture, a pre-autoclaved Falcon tube was inoculated with one colony from the streaked YT agar plate & incubated overnight at 37°C, starting 12-14 hours prior to the intended *Muhurta*. A pre-autoclaved 250 ml conical flask with its 50 ml Luria broth medium was then inoculated with this pre-culture, becoming the main culture for that growth experiment. Each step of the process also had a pre-autoclaved blank control to verify that without *E. coli* addition, growth would not be observed: for step one, a blank YT Agar plate; for step two, a blank 15 ml Falcon Tube with its 3 ml Luria Broth; and for step three, a blank 250 ml flat-bottomed conical flask containing 50 ml Luria Broth.

Starting Optical Density at 600 nm (OD 600) of main cultures was 0.002: OD 600 of the pre-culture was measured (using Thermo Scientific™ NanoDrop 2000c, Wilimgton, USA), and required dilution factors were calculated and applied. The same Shaker-cum-Incubator held at 37°C and 180 rpm, was used to incubate main cultures for six hours. On experiment days, up to 7 growth curves were generated for different TOFI *Muhurtas*.

Data Extraction: At times, 0, 60, 120, 150, 180, 210, 240, 300 & 360 minutes after *Muhurtha*, OD 600 measurements were taken using 1 ml aliquots of culture. The five OD 600 readings, 180 – 360 minutes were used to create trend line slopes, i.e. exponential phase growth rates.

Data Analysis: used SPSS 21.0. OD 600 data was entered in Libre-Office-Calc Spreadsheets under Ubuntu (Linux) to generate each growth curve. Figure 1 displays a model.



Caption: Model Growth Curve illustrating Exponential, Deceleration, and Saturation Phases

Fig 1: Model Bacterial Growth Curve showing Main Phases

Results

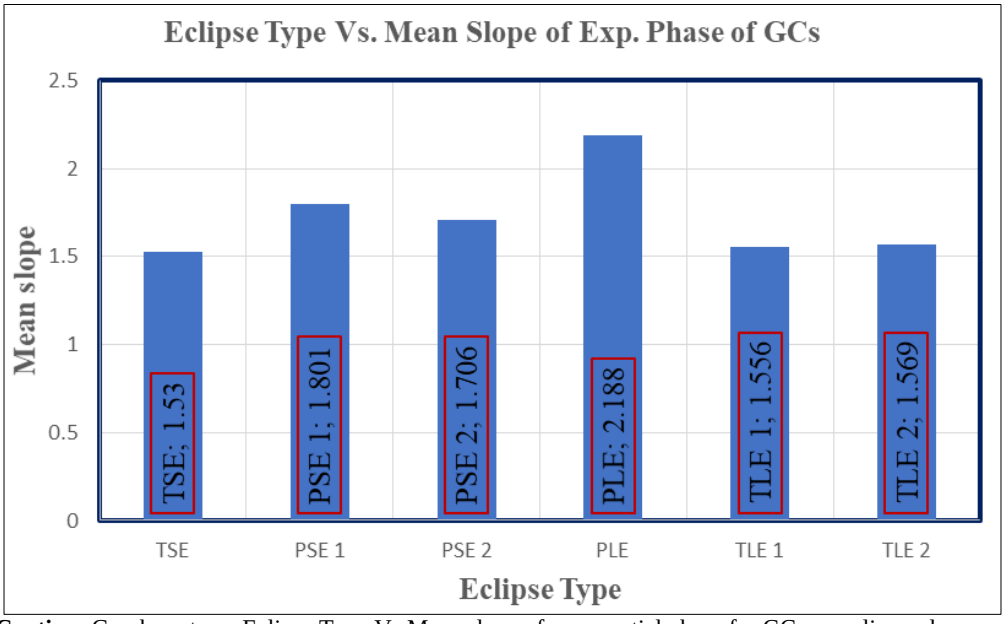
Table 1 displays the mean of trend line slopes for all growth curves taken on days of eclipses. As may be seen, fourteen growth curves were taken on three days of solar eclipses, of which the first was total and second and third were partial. Mean slope was least on the day of the total eclipse, as hypothesized. Likewise, nineteen growth curves were taken on three days of lunar eclipses, of which the first was partial and the second and third were total. Mean slopes were least on the total eclipse day, as had been similarly hypothesized.

Table 1: Eclipses by Type & Date, Growth Curve Ids & Slopes

Type: Total / Partial & Gamma		Date	Gc # Id	Mean Slope
Solar Eclipses				
Total: 14 GCs / Total: 11 TOFIs	Total – TSE (g = 0.4367)	21-22 August 2017	68-72 (5)	1.530
	Partial-PSE1 (g = -1.5342)	13 July 2018	96-98 (3x2)	1.801
	Partial-PSE2 (g = 1.1476)	11 August 2018	119-121 (3)	1.706
Lunar Eclipses				
Total: 19 GCs / Total: 19 TOFIs	Partial – PLE (g = 0.8668)	7-8 August 2017	57-61 (5)	2.188
	Total-TLE1 (g = -0.3014)	31 January 2018	87-93 (7)	1.556
	Total-TLE2 (g = 0.1168)	27-28 July 2018	109-115 (7)	1.569

Caption: Table 1 presents types of eclipses together with dates, growth curve ID numbers with no. of growth curves (GC) in parentheses, and means of exponential phase slopes for each eclipse.

Figure 2 portrays the mean of exponential phase slopes for growth curves on days of eclipses



Caption: Graph portrays Eclipse Type Vs Mean slope of exponential phase for GCs on eclipses days

Fig 2: Eclipse Type Vs Mean Slopes of Exponential Phase of Growth Curves

Discussion

The Solar Eclipse results are entirely in agreement with those obtained previously [1, 8] by Dr. Rameshrao: the stronger the solar eclipse, the stronger its malefic power to oppose life; in this case to reduce exponential phase growth rate, and in his case to increase virus propagation in cell cultures. Similarly for results on days of lunar eclipses, exponential phase growth rates were lower on the days of total lunar eclipses, than on the partial lunar eclipse day, far lower.

These results confirm Dr. Rameshrao's solar eclipse findings [1, 8], extending them in two ways. First, his finding for solar eclipses of malefic influence on cells under virus attack also holds for bacterial growth, which slowed – a malefic influence. Second, in the results for lunar eclipses: the two total eclipses had stronger effects than the partial eclipse. Interestingly, the strongest decrease of exponential phase growth rate seemed to be from the total solar eclipse. Apparently it was affecting the bio-sphere globally, as observed in earlier cases; its centre was on North America [17], whereas the experiments detecting its influence were in South Asia.

Also, the very high growth rate for the partial lunar eclipse seems significant. This was only a small partial eclipse (**γ** 0.87) [18], meaning that the effects of the full moon may hardly have been compromised. This would account for the remarkably high value of exponential phase growth rate observed that day (Table 1).

Conclusion

Eclipses have life opposing effects, their influence is malefic. Also, as the solar eclipses could not be seen in India, those eclipses appeared to act globally, as noted previously [1, 8]. These inferences agree with Jyotisha [9, 10].

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