Let the value of the limit be L. Then

$$\begin{aligned}
\log L &= \lim_{n\to\infty}\left(-\frac{n+1}{2n}\log n + \sum_{k=1}^{n}\frac{k}{n^2}\log k\right)\\
&= \lim_{n\to\infty}\left(-\frac{1}{n^2}\sum_{k=1}^{n}k\log n + \sum_{k=1}^{n}\frac{k}{n^2}\log k\right)\\
&= \lim_{n\to\infty}\left(\sum_{k=1}^{n}\left(\frac{k}{n}\log\frac{k}{n}\right)\frac{1}{n}\right)\\
&= \int_0^1 x\log x\,dx = -\frac{1}{4}
\end{aligned}$$

Therefore,

$$L = \frac{1}{\sqrt[4]{e}}.$$