**Mycoplasmaleillae** infection has been described as an intravenous (i.v.) formamidination of mycoplasmaleillae which has been approved in the United States. **Mycoplasmaleillae** are Gram-negative bacteria, and they are the most common cause of community-acquired pneumonia (CAP). Mycoplasmaleillae species and -like organisms are capable of causing respiratory infections, including severe pneumonia. In this study, we evaluated the efficacy and safety of **Mycoplasmaleillae** i.v. in patients with community-acquired pneumonia (CAP). Methods: This was a prospective, single-center study of 71 adult patients with CAP, randomized to receive **Mycoplasmaleillae** i.v. or standard treatment. The primary endpoint was the clinical response at 30 days after the end of therapy. Results: Among the 71 patients enrolled, 40 in the **Mycoplasmaleillae** i.v. group and 31 in the standard treatment group, the clinical response was similar at 30 days (73% vs. 68%, **p** = 0.56). Conclusions: The results of this study demonstrated the efficacy and safety of **Mycoplasmaleillae** i.v. in the treatment of CAP, and the treatment of community-acquired pneumonia, including severe pneumonia, was safe and effective in the evaluated population. **Mycoplasmaleillae** i.v. is an effective and well-tolerated treatment option for patients with CAP.