BAB V
KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan penelitian yang dilakukan, diperoleh kesimpulan sebagai berikut:

1. Protein yang terekstrak menggunakan $FeCl_3$ paling besar berada pada pH 2 dengan konsentrasi protein 1,78 mg eq BSA/mL. Sementara pada kondisi pH basa (pH $\geq$ 4) konsentrasi protein yang terekstrak cenderung konstan sehingga titik isoelektrik tidak diamati.
2. Persentase *removal* koagulasi dan *volume sludge* tidak teramati pada derajat keasaman (pH) yang terlalu rendah. Peningkatan persentase *removal* seiring peningkatan pH 3 menuju 6 di mana mekanisme dominan yang terjadi yaitu *charge neutralization*. Sementara persentase *removal* dan *volume sludge* menurun seiring meningkatnya pH lebih besar dari 6 di mana mekanisme yang terjadi yaitu *bridging flocculation*.
3. Derajat keasaman (pH) koagulasi terbaik pada pH 6, berbeda dengan pH terbaik pada umumnya yaitu pada kisaran pH 3. Diduga Fe^{3+} lebih mendominasi sebagai koagulan dibandingkan ekstrak protein petai cina.
4. Persentase *removal* koagulasi meningkat seiring meningkatnya dosis koagulan dari 4 mL/L menuju 20 mL/L. Sedangkan pada dosis koagulan lebih dari 20 mL/L memberikan penurunan persentase *removal*. Sementara *volume sludge* meningkat seiring meningkatnya dosis koagulan dari 4 mL/L menuju 44 mL/L. Dosis koagulan 20 mL/L memberikan persentase *removal* zat warna terbaik.
5. Persentase *removal* zat warna untuk koagulan $FeCl_3$+ekstrak protein cenderung lebih besar jika dibandingkan dengan koagulan $FeCl_3$ (koagulan komersial) seiring meningkatnya dosis koagulan. Pada pH 6 dan dosis koagulan 20 mL/L, persentase *removal zat warna* sebesar 94,71% dan *volume sludge* sebesar 9 mL/L untuk koagulan $FeCl_3$+ekstrak, sementara persentase *removal zat warna* sebesar 91,37% dan *volume sludge* sebesar 8 mL/L untuk koagulan $FeCl_3$.

5.2 Saran

Berdasarkan penelitian yang dilakukan, saran yang dapat diberikan sebagai berikut:

1. Pelarut yang digunakan untuk proses ekstraksi protein perlu dikaji lebih lanjut sehingga memperoleh konsentrasi protein yang maksimal.
2. Konsentrasi pewarna dan dosis koagulan perlu dikaji lebih lanjut untuk memperoleh persentase *removal* yang maksimum dan *volume sludge* yang minimum.

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